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THE ESSENTIAL GUIDE TO CLASSIC GAMES
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RETRO SPECIAL EDITION GAMER
ISSUE 100

There's life in the old games yet and 100 issues of Retro Gamer proves it!

Retro Gamer,
Thank you for helping us remember the old games and allow them to continue living!

Christophe Andreani

Andrew Oliver

Keep going Mr. Driver!

Congratulations

Congratulations!

Simon Phipps

4th Feb 2012

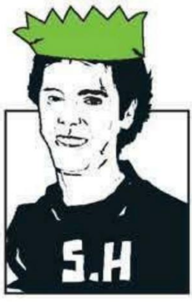
THE RETROBATES

FAVOURITE VIDEOGAME MOMENT



DARRAN JONES

It's got to be the downhill run in *Strider*. An amazing moment that still gives me goosebumps whenever I play it.
Expertise:
Juggling a gorgeous wife, two beautiful girls and an award-winning magazine
Currently playing:
Magic: The Gathering Online
Favourite game of all time:
Strider



STUART HUNT

The moment when a CPC game finished loading was always great. When the loading screen had finished drawing and the title screen flashed up, however bad the game was, the feeling was the same.
Expertise:
Games with flying bits in them
Currently playing:
Metal Gear Solid HD Collection
Favourite game of all time:
Metal Gear Solid HD Collection



PAUL DAVIES

Drifting the corner at the top of the hill in *Ridge Racer* and the commentator says, 'Woah, who taught you how to drive?' A nice and easy trick, but you feel cool every time.
Expertise:
Constantly banging my head against a brick wall
Currently playing:
Halo: Reach
Favourite game of all time:
Ghouls 'N Ghosts



IAIN LEE

"Right on, commander" from the always-brilliant *Elite*.
Expertise:
Pretending to be an American on Xbox Live
Currently playing:
Halo: Reach
Favourite game of all time:
Elite (BBC Model B version)



JASON KELK

The point in *Turrican II* where the hero gets bored of walking and climbs onto a spaceship for some blasting!
Expertise:
Bizarre pieces of 8-bit hardware
Currently playing:
XOP Black Ultra (PC)
Favourite game of all time:
Io



PAUL DRURY

In *Pilotwings*, when the stern, bushy-moustached flight instructor starts blubbing after you put in a perfect performance. Who said videogames can't make you cry?
Expertise:
Vacuum tubes
Currently playing:
Wacky Waiters
Favourite game of all time:
Sheep In Space



CRAIG GRANNELL

A couple of moments in *Creatures*: the chainsaw-wielding psycho, and the daft Fuzzy Wuzzies.
Expertise:
Games that don't require 37 fingers to play
Currently playing:
Hero Academy
Favourite game of all time:
H.E.R.O.



DAVID CROOKES

Now that's a question. The joy of combining some stuff with some other stuff and having some stuff happen in *Dizzy* was a cool moment for me.
Expertise:
All things Amstrad CPC, *Dizzy*, Atari Lynx and PlayStation
Currently playing:
Uncharted 3: Drake's Deception
Favourite game of all time:
Broken Sword



MARTYN CARROLL

In *GTA III*, when you realise you're no longer watching the opening cut-scene, and you can go anywhere and do anything.
Expertise:
Games that make blip-blip sounds
Currently playing:
Resident Evil Revelations
Favourite game of all time:
Jet Set Willy

LOADING...



So here we are. Issue 100 and Retro Gamer is still going strong. When I first landed my dream job as editor, I certainly didn't expect us to reach issue 100. It seemed an impossible milestone for such a niche magazine, and I remember commenting that I'd be happy to hit issue 35. Well, issue 35 came and went and I really do believe that the magazine is better now than it has ever been. This is mainly due to the talented team of freelancers we have, who continue to dig up fascinating stories about classic games, but it's also down to the loyal support of our readership, which continues to climb.

Of course, I wouldn't be here without the fine work done by Martyn Carroll and everyone at Live Publishing when they launched their new retro magazine, so we've decided to include the first issue of **Retro Gamer** alongside our 100th, as it shows how the magazine has evolved over the past eight years. This issue hasn't been easy to put together, but I'm confident that it represents the best of what you expect from **Retro Gamer**. Thanks for all the support that we continue to receive from you all; it really is appreciated.



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>> **Load 100** Breathing new life into classic games

FEATURED



RETRO REVIVALS





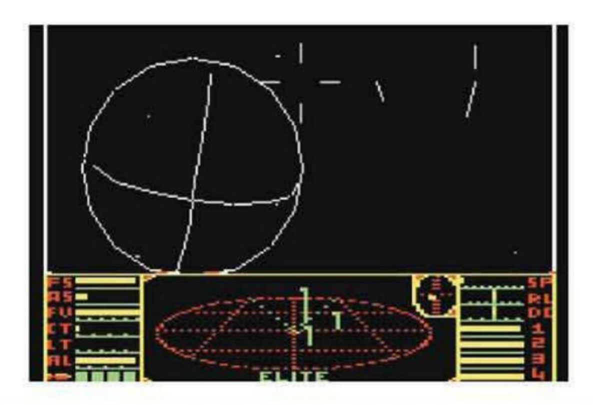
In the hot seat this month…







"You can't just wade in, all guns blazing" David Braben





Type-in game



ESSENTIALS

RETRO RATED





retro radar

>> GIVE US TWO MINUTES AND WE'LL GIVE YOU THE RETRO WORLD



>> It would appear that we're not the only ones celebrating, as Twin Galaxies has recently turned 30. We also chart the sad closure of Hudson, and the interesting (but probably not real) new Neo Geo portable



CONTENTS





» Many famous gamers of the day gather to break world records during the celebration on 19 March 1983.

THE BIG THIRTY

TWIN GALAXIES CELEBRATES 30 YEARS

8 February 2012 marked the 30th anniversary of the Twin Galaxies Scoreboard, which has been the official scorekeeper of videogaming since 1982. Through a partnership with Guinness and its famous *Book of World Records*, Twin Galaxies is still going strong today, as it is now the official supplier of verified records for Guinness's annual *Gamer's Edition*. Most people, however, will unfortunately associate Twin Galaxies with the 2007 film, *The King Of Kong: A Fistful Of Quarters*, a documentary which chronicled the battle for *Donkey Kong* supremacy between Billy Mitchell and Steve Wiebe. The film casts the Twin Galaxies organisation in a somewhat unfair light, depicting a bunch of overzealous, even Machiavellian, classic videogaming nerds just out to break the spirit of the upstart new kid on the block. Walking away from the film with just that portrayal of Twin Galaxies lingering in the mind would be doing the organization, and all those who are intimately involved with it on a day-to-day basis, a massive disservice.

Twin Galaxies' humble beginnings can be traced back to a simple arcade in the quintessential American small town of Ottumwa, Iowa, population of around 25,000. The gaming palace originally opened its doors on 10 November 1981 and a scant three months later "The Twin Galaxies Intergalactic Scoreboard" was born. The Scoreboard laid down the official rules for competitive video game playing and crowned the champions on a multitude of video games. Twin Galaxies activities inspired Mayor Jerry Parker to decree that Ottumwa was the "Video Game Capital of the World" on 30 November 1982. On top of that distinguished honour, both *Life* magazine and popular American TV show *That's Incredible!* came to Twin Galaxies to create celebrated events that are now etched in the memories of all gamers who attended, and several who wanted to but couldn't.

Walter Day, the iconic face and Head Scorekeeper of Twin Galaxies for almost 27 years, had a few thoughts on being Head Scorekeeper of Twin Galaxies for 27 years. "People like to rib me about my referee's jersey," Walter says. "And I even called myself 'The Man' in *King Of Kong*, but being the Head Scorekeeper for Twin Galaxies for over 27 years has been the most wonderful experience – like a beautiful dream. I was honored to be a part of the 'birth of organized video game playing.' However, destiny was knocking and if I had not started Twin Galaxies and made Ottumwa the 'birthplace' of the gaming age, it would have happened somewhere else, with other people inspired to take on the task of turning videogame-playing into a sport." *

timeline

10 Nov 1981 – THE TWIN GALAXIES ARCADE OPENS ITS DOORS FOR BUSINESS IN OTTUMWA, IOWA. WALTER ALDRO DAY AND JONATHAN BLOCH ARE THE PROPRIETORS.

8 Feb 1982 – WALTER DAY'S DATABASE OF VIDEOGAME HIGH SCORES IS RELEASED TO THE PUBLIC FOR THE FIRST TIME AS "THE TWIN GALAXIES NATIONAL SCOREBOARD."







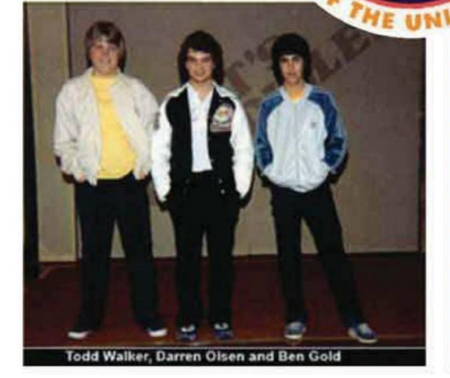






10 LONGEST RUNNING HIGH SCORES

» The three main competitors that appeared on That's Incredible's Video Game Invitational on 21 Feb 1983.



Todd Walker, Darren Olsen and Ben Gold

Scott Safran:	Asteroids	43,336,440	Set on 13/11/1982
Eric Olofson:	Alpine Ski	500,774	Set on 23/11/1982
Todd Rogers:	Gorf	653,990	Set on 24/11/1982
Mike Perez:	Moon Shuttle	30,780	Set on 06/12/1982
Victor Ali:	Missile Command	80,364,995	Set on 23/12/1982
Tom Bundy:	Kickman	4,787,665	Set on 28/12/1982
Colin Hageney:	Robby Roto	518,250	Set on 05/01/1983
Ed Flores:	Reactor	448,833	Set on 02/01/1983
Mark Rassmussen:	Eliminator	50,800,500	Set on 22/01/1983
Donovan Hellinger:	Drag Race	4.3 seconds	Set on 21/02/1983

“Ottumwa, Iowa is now recognised as the ‘birthplace of organised videogame playing’ and the cultural crossroads of the videogame age. It's not surprising that the Ottumwa city fathers are working to create the official International Videogame Hall of Fame & Museum in the city”

WALTER DAY, REVEALS OTTOMWA'S NEW PLANS



7 Nov 1982
GAMERS FROM AROUND THE WORLD DESCEND ON THE SLEEPY IOWA TOWN FOR A CHANCE TO HAVE THEIR PICTURE TAKEN FOR LIFE MAGAZINE. AMONG THOSE IN ATTENDANCE ARE BILLY MITCHELL, STEVE HARRIS (FOUNDER/PUBLISHER OF *ELECTRONIC GAMING MONTHLY*), STEVE SANDERS AND BEN GOLD.

30 Nov 1982
JERRY PARKER, MAYOR OF OTTUMWA, DECLARES THAT HIS FINE CITY IS “THE VIDEO GAME CAPITAL OF THE WORLD.” THE GOVERNOR OF IOWA, TERRY BRANSTAD, RATIFIES THIS BOLD DECLARATION.

21 Feb 1983
THE POPULAR U.S. TV SHOW “THAT'S INCREDIBLE!” BROADCASTS THE VIDEOGAME INVITATIONAL FROM THE TWIN GALAXIES ARCADE. THE EVENT IS ULTIMATELY WON BY BEN GOLD.

25 July 1983
THE U.S. NATIONAL VIDEOGAME TEAM IS FORMED BY THE TWIN GALAXIES INTERGALACTIC SCOREBOARD. WALTER DAY IS NAMED TEAM CAPTAIN AND THE FIRST SIX MEMBERS OF THE TEAM ARE: BILLY MITCHELL, BEN GOLD, STEVE HARRIS, JAY KIM, CAT CABRERA AND TIM MCVEY.

8 Feb 1998
THE TWIN GALAXIES' *OFFICIAL VIDEO GAME AND PINBALL BOOK OF WORLD RECORDS* IS PUBLISHED. THE 984 PAGE TOME CONTAINS RECORDS DATING ALL THE WAY BACK TO 1981.

24 Aug 2007
THE DOCUMENTARY FILM *THE KING OF KONG: A FISTFUL OF QUARTERS* IS RELEASED IN THEATRES. ANOTHER FILM DEALING WITH TWIN GALAXIES HISTORY, *CHASING GHOSTS: BEYOND THE ARCADE*, IS SCREENED AT THE SUNDANCE FILM FESTIVAL A FEW MONTHS BEFORE *KONG*'S RELEASE.

5 May 2009
OTTUMWA RECLAIMS ITS TITLE AS “VIDEO GAME CAPITAL OF THE WORLD” AND PLANS ARE SET IN MOTION TO ESTABLISH THE INTERNATIONAL VIDEOGAME HALL OF FAME IN DOWNTOWN OTTUMWA, A FEW SHORT BLOCKS FROM WHERE THE ORIGINAL TWIN GALAXIES ARCADE STOOD.

16 Dec 2009
WALTER DAY OFFICIALLY HANGS UP HIS ZEBRA STRIPED REFEREE JERSEY AND RETIRES FROM TWIN GALAXIES TO PURSUE A CAREER IN MUSIC.

Here's the bio...
Iain Lee is a freelance broadcaster who loves gaming, particularly retro gaming. He used to present the 11 O'Clock Show, but please don't hold that against him. You can find more information about Iain at **www.iainlee.com**



Hi there. My name's **Iain Lee**. You might remember me from Thumb Bandits and The 11 O'Clock Show, but now I'm here to confess my love for retro gaming

Happy birthday

So Retro Gamer magazine is 100 years old. Congratulations. Who'd have thunk it? While I don't have the very first issue – I've seen it behind glass – I do have some from 1919 and man, they make for funny reading! It's all black and white and there are NO PHOTOS! To quote Proust, "the past is a foreign country – everyone is stupid and they don't speak English properly."

I've been asked by the editor of **RG** to do something special for this centenary issue. I was going to write 100 reasons why retro games were so ace, but to be honest that sounded like too much work. So I didn't. If you're that bothered, you have a go and post it on the forum. A pat on the back to the best one. Oh yeah, it has to be between 500 and 550 words and two weeks late for you to actually claim that pat.

I have been toying with the idea for a long time of doing a whole column in BASIC, an actual program that you could type in and play. Again, this is a great idea – and it's the thought that counts, right? – but what a lot of faff. No ta. Also, I can't really remember much BASIC. I remember $strings and 'IF THEN' but I have no clue what to do with them.

It's odd because I used to be a right little geek. I've mentioned way too many times how I would loiter in Smiths and Boots, playing games. Well, if they had no games loaded up and didn't believe I was considering buying them so wouldn't let me test them, I would write my own little games and programs. Quizzes that asked your name, a program that converted Fahrenheit to Celsius – you name it, I would do it. As long as it was one of those two I just mentioned.

I thought the best thing I could do in this special edition was to let you know how I first came across **Retro Gamer** and how it touched my life. I was in my local WHSmith and I saw it nestled between a Nintendo mag and *Record Collector*. (It always comes back to Smiths. The woman who works there still thinks I present an early morning breakfast show, despite me telling her I left seven years ago. If I go in there at 10am I get, 'You finished work for the day?' I have now started saying that I have and it was a real chore interviewing the reformed Steps but someone has to do it.) Actually, it was behind *RC*, and as I was flicking through it, trying to find some decent bands beneath the articles about Tull, I saw **RG**. And what a vision!



I quickly scooped it up, took it home and was hooked. The perfect magazine, written especially for me! It is the only magazine I have ever subscribed to. A year or so later, a cheeky email to the editor and I was writing for it. A lot of the money I get per column goes on old videogames, so I guess it's all cyclical.

Happy birthday, **Retro Gamer**
X

I don't have the very first issue, but I've seen it behind glass

FAREWELL HUDSON

HUDSON SOFT TO BE ABSORBED INTO KONAMI

The UK games industry has taken a bit of a battering in the last two years, with a number of software houses forced to close their doors, including the likes of Bizarre Creations, Realtime Worlds and Black Rock Studio. But it isn't just the UK games industry that is feeling the pinch and pressures of the current global economic downturn.

The Hudson Group, one of Japan's earliest videogame developers, will cease to exist on 1 March 2012, when the Hudson name is officially retired and the company gets folded into its parent, Konami.

The announcement from Konami came after a decision to dissolve Hudson was agreed by the company's board of directors during a meeting held in January.

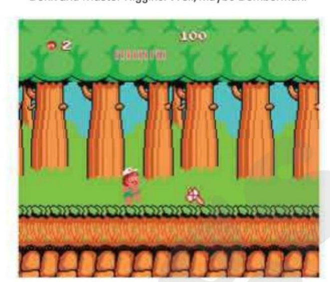
Some would argue that the writing had been on the wall for Hudson for a while, notably when the company's North American distribution division, Hudson Entertainment, was disbanded last year. Its Japanese arm hasn't released anything notable since it refocused its attention on developing for the burgeoning mobile and social game space.

Established in 1973 by two brothers, and starting life as a shop selling telecommunications and photography products, Hudson found prominence when it became the first third-party developer for Nintendo and created a string of popular and enduring games for the Famicom, including *Bomberman*, *Lode Runner* and *Adventure Island*.

Though the Hudson name will no longer exist, it's expected that its popular and marketable properties will move under the Konami banner. That likelihood notwithstanding, the announcement that this once-great videogame giant will no longer have a place in the industry still comes as upsetting news for many with fond memories of its classic games.



» [SNES] Though the Hudson name has been retired, we're sure we've not seen the last of Bomberman, Bonk and Master Higgins. Well, maybe Bomberman.



MICROBYTES

Snippets of news from the exciting world of retro



>> Super Mario Bros: The Lost Characters

Jay Pavlina's *Super Mario Bros Crossover* is one of the best *SMB* remakes out there. Its big hook comes from letting you play the game with characters from other games of the era, including Ryu Hayabusa from *Ninja Gaiden*, Link from *Zelda*, and even *Contra*'s Bill Rizer. Its release caused quite a stir, and the positive reception it garnered inspired Jay to spend the last year refining and updating the game. The latest version, *Super Mario Bros Crossover 2.0*, added Super NES and Game Boy graphics and music, and allows players to mix and match them during play. Visit Jay's website at **www.explodingrabbit.com** to have a go.

NEO GEO POCKET TAKE 2?

SNK RUMOURED TO BE LENDING ITS NAME TO A NEW HANDHELD

The Neo Geo is rumoured to be making a return following news that a new handheld console will be launching under the SNK name.

Details about the handheld are currently lighter than a helium-addicted butterfly. In fact, it's so early in development that it doesn't even have a proper name yet, currently going by the wonderfully literal working title of 'Neo Geo Portable Device' – hopefully a snappier one will come to marketeers' minds before the machine's launch.

The console is being touted as a portable Neo Geo AES unit, and its sleek and sharp design likened to that of Apple's iPhone 4.

Japanese website Famicom Plaza was the first to give details about the device, which is said to feature 2MB of onboard storage, an AV and SD port, and a 4.3-inch screen. But what has got most people excited is the reveal that it will come with 20 preloaded Neo Geo games. The list is a nicely varied, albeit predictable, array of titles, including *Metal Slug*, *Last Resort*, *World Heroes* and *Fatal Fury*.

There's no news yet on price or release date, and as SNK Playmore has yet to come out and formally announce its backing of the device, until it does we advise taking these details with a pinch of salt.

One thing's for sure, though: the prospect of a portable Neo Geo has certainly got us and a great many SNK fans out there pretty excited. We're not holding our breath for a European release, though.



» SNK has had dealings in the handheld gaming space once before, in 1998 when it released the Neo Geo Pocket.



Here's my bio…
In 1992 I started out on *Mean Machines Sega* and *Nintendo Magazine System*. In 1995 I became editor of *C&VG*. I led the *C&VG* website from 1998 until Christmas 2000, then I left journalism to be concept design manager at Criterion Games. I returned to journalism in 2002 and from 2005 I've been running my own company, Unlikely Hero.



Hello, retro gamers. My name is **Paul Davies**. I used to be the editor of C&VG and have also worked on a number of classic gaming magazines over the years

For the love of games

Thank you, Retro Gamer, for proving that videogames are as important to us as any entertainment, art or pure sport. They may be virtual worlds, but our connection to them is real and enduring.

Helpfully, the day before writing this I attended an impassioned developer presentation for a new videogame, the title and publisher of which aren't important. But this briefing for a high-profile sequel to a gangbusters action game was fuelled by a director's wish to connect more with his audience; to reach out to more players without abandoning loyal fans.

When it came down to it, this was one bloke harbouring the greatest desire to beat us senseless with astonishing technology while at the same time hitting home with an emotional narrative. It mattered to him, so it mattered to me. And, later, spending an hour with the game, I would have received these sentiments via the controller and the AV setup regardless.

For some of you reading this, that game will become a lasting memory. It might inspire you to investigate similar stories, pursue comics that share its art style, seek out more works by the music composer, or aim to perfect your technique. It holds lasting importance.

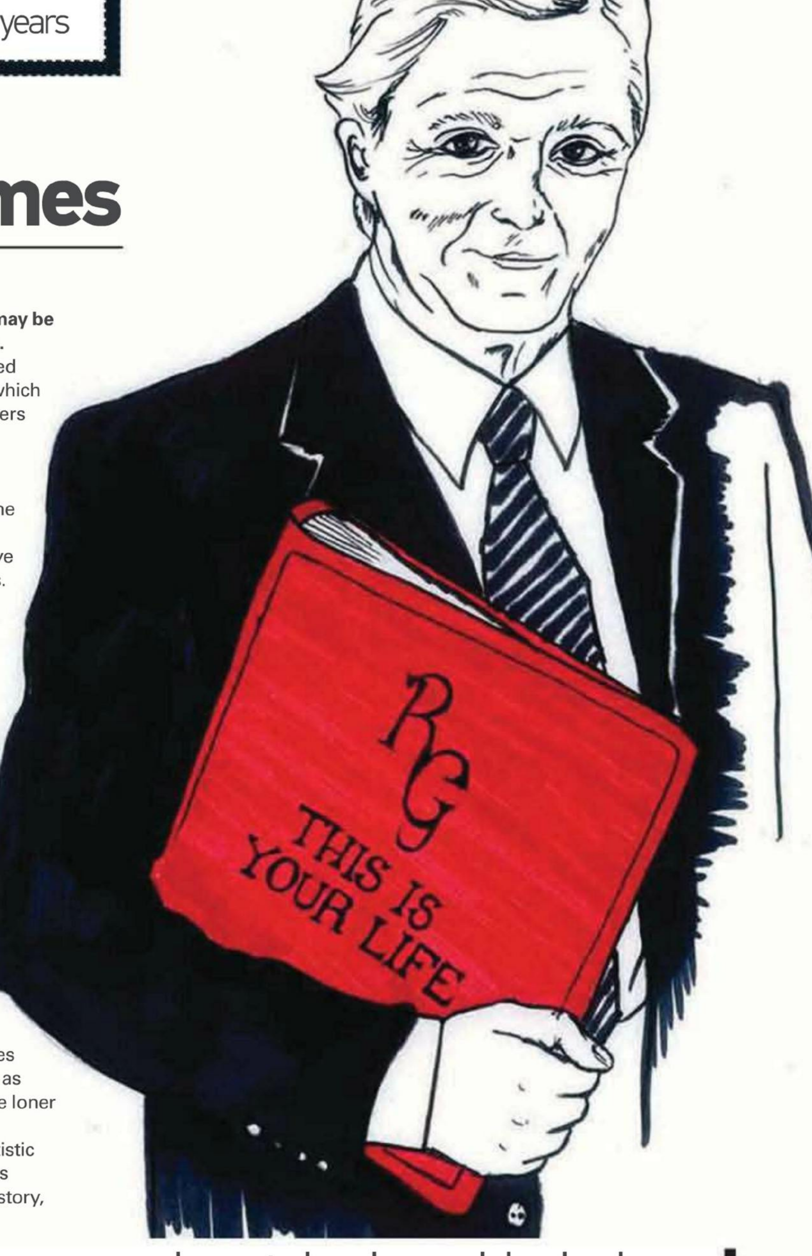
We respond to games like a favourite song, a thrilling novel or engrossing cinema, and we celebrate them as competitive sport or an individual's mental challenge. We visit alien worlds together, solving the bigger mysteries while sharing appreciation for the detail within places and beings that surround us. We are allowed inside the creator's thoughts like no other form of entertainment, and we inspire the creators to refine these connections with our hearts, minds and manual dexterity.

Games, and I do mean videogames specifically, have a meaningful place in modern society, and this is highlighted not so much by their newness any more but in their power to shine as fond memories.

True, the earliest game centre coin-ops were not too far removed from the bells and whistles of fairground attractions. They'd take your money and kick your arse, and it would serve you right for falling into their trap. But by the time games evolved into the likes of *Daytona USA* and *Street Fighter II*, the presence of real human beings as part of the attraction had, I think, been overlooked. This whole idea of the loner gamer hiding from the real world has always been nonsense.

Games are something we have been sharing together with sincere artistic appreciation since *Pong* became *Pitfall!* in the blink of an eye. Sometimes where you would find them helped make their mark on your personal history, flocking with friends to the basement of a small café to discover the newest cabinets. With home computers, your previous night's exploits in flight simulators and role-playing quests would make for busy conversation in the school canteen next day.

I'm grateful to this magazine for knowing that these memories are both important and inspiring.



They may be virtual worlds, but our connection to them is real and enduring

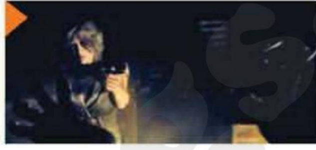
RESIDENT EVIL RETURNS

RESIDENT EVIL 6 ANNOUNCED WITH ACTION-PACKED TRAILER

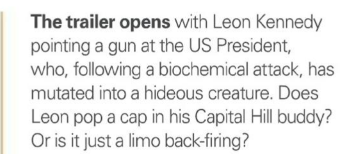
Resident Evil 6's announcement trailer ticked all the right boxes, teasing us with a generous chunk of in-game action and dramatic cinematic cutscenes that really got our speculation brain cells stirring. Since the trailer went up, fans and critics alike have been quick to pick apart its gory entrails. Naturally late to the party, we've highlighted some of the best observations that we and others around the offices have managed to glean from it. To be honest, you won't have to wait very long to get the full story behind the game; it's scheduled for release later this year.

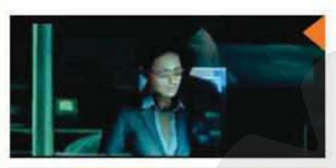
The trailer opens with Leon Kennedy pointing a gun at the US President, who, following a biochemical attack, has mutated into a hideous creature. Does Leon pop a cap in his Capital Hill buddy? Or is it just a limo back-firing?





This is Leon's new partner. As yet we're unsure who she is, but we do know she feels responsible for either a) the president's hideous transformation, b) the infected outbreak that happens in this instalment, c) both, or d) neither.







Ingrid's back. You might remember her from *Resident Evil 4*, where she helped guide Leon through the game's infected Eastern European village from behind a desk. It looks like she'll be doing more of the same in this episode.

The action then switches to Chris Redfield, who now forms part of Bioterrorism unit dropped into China and tasked with containing the outbreak while proceeding to point 'Ace of Spades.' Is Lemmy the figure behind Umbrella!?

As noted by quite a few people in the office, the Chris section seems to have a real *Vanquish* meets *Gears Of War* vibe to it. We would have to agree with them, considering there's a new cover system at play and a bit of knee-sliding action too.





This is the game's final story thread. We're pretty sure the girl is Ashley Graham, the president's daughter, from *Resident Evil 4*. The other chap seems to be an ex-mercenary, whose blood is somehow important.





The trailer ends with a flurry of action scenes, one of which reveals Chris hiding inside a tank; he and his soldier comrades are up doo-doo creak with a plastic fork after a building-sized beastie attacks them in an Eastern European city.

This trailer strongly hints to *Resident Evil 5*'s co-op gameplay, with individual tales interlinking during the course of the game. We wonder whether this will be in a chronological manner, or take the approach of *Resi 2*?

MICRO BYTES



TRIP DOWN MEMORY PAIN

NES fans are urged to play *Abobo's Big Adventure* this month. The free-to-play indie game stars familiar *Double Dragon* baddie, Obobo, who is on a mission to rescue his abducted son. It's a madcap adventure that has him mating with a mermaid, tag-teaming with WWF Superstars and battling classic NES characters across levels inspired by iconic stages from several retro games. Wonderfully playable, you can find it at: http://tinyurl.com/84qrafq





A MOMENT WITH... Mark Jones

Darran Jones speaks to ex-graphic designer Mark Jones, who recently thrilled the homebrew community with his excellent Dingo artwork

Who is Mark Jones?

Mark Jones started off at Imagine Software, where he designed graphic and music for numerous arcade conversions, including *Gryzor, Arkanoid* and *Bad Dudes Vs Dragon Ninja*. He's recently been back in the limelight thanks to his excellent work on the ZX Spectrum remake of Ultimate's *Dingo*.

Which of your games would you recommend and why?

Dingo, for a few reasons. Obviously it's the first game I've worked on for over 20 years, so it showed me I could still do it, despite the long gap. It's also the only game where I produced the graphics, the music and the cover art. So it has me stamped all over it.

What is your proudest gaming memory?

That was back in 1987 and *Wizball* was released on the Spectrum and it was a Crash Smash. *Crash* was (and still is) my favourite computer games magazine and I'd spent my later school years reading it and hunting down the Crash Smashes with my school mates and there was my first game with that distinctive Crash Smash badge on it.

What's the most difficult thing you've encountered while working on a game?

Trying to work out a schedule for *Flood 2* for Bullfrog. I was working at home freelance and had to work out how long it would take me to do the graphics, then work out a price! I hadn't got a clue! I can't see how you work that out; you don't know what difficulties you're going to come up against. But I can see why you'd have to make an educated guess in order to produce a contract. I did guess, and was just about to get stuck in to the meat of it all, having already produced a lot of animations and the majority of level one, when it all fell through and never got made.

Which industry veteran do you most admire?

Simon Butler. He's been in the games industry since 1983/4 and he's still beavering away at it. He's a personal friend and I never tire of hearing him talk about the industry, past and present. True, sometimes he says things that rub people up the wrong way but 99% of the time what he says is true. I've never met anyone with such unwavering enthusiasm for good games in my life, and I doubt I ever will. Plus he took me under his wing when I started at Ocean and had a lot of influence on me. Cheers Simon!

What games do you wish you'd be involved in and why?

I wish that *Flood 2* had been made and that maybe that could have led to me working at Bullfrog. When I went down to their headquarters Les Edgar at Bullfrog told me they'd all been in stitches over my silly little games design and that he'd showed some of the animations to some people who had come over from Nintendo or Sega and they'd loved them too.



» [Spectrum] *Dingo* is one of Mark's proudest achievements and it's easy to see why. It made its debut at the Replay Expo 2011.

> "Les Edgar at Bullfrog told me they'd all been in stitches over my games design"

What opportunities has working on videogames given you?

I've met some great people over the years and they've been people who've tended to keep in touch. I've had my name in lots of magazines, something that would never have happened had I not been in the industry. I've had a lot of fun too, be it talking about the old days to people who used to play the games I worked on at the various shows I've been to or the time I had recently working on *Dingo*. That was jolly.

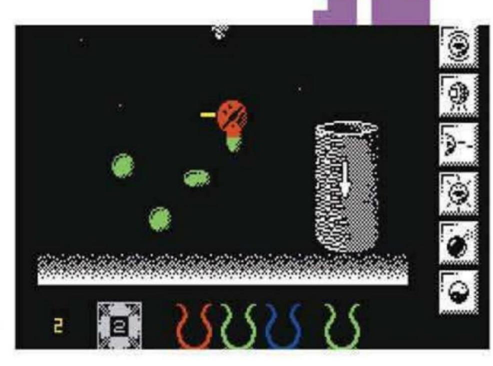
What's your darkest memory of working in the industry?

When, after *Flood 2* fell through, the work was drying up and I decided to try and get a normal job. I should have battled on.

And your best?

Seeing the reaction to *Dingo* when we launched it at the Replay Expo. A year ago I would have laughed if someone had told me I was going to do a new Spectrum game and it was going to be received so well. *





2 March – 29 March

retrodiary

» A month of retro events both past and present



2 March 2007
Sega's *Sonic And The Secret Rings* for the Nintendo Wii hits shops in the UK.



4 March 1999
■ A new handheld console produced by Bandai, the WonderSwan, is released in Japan.



4 March 2011
■ Nintendo gives us yet more *Pokémon* pleasure with the release of the *Black* and *White* versions across Europe on the DS.



7 March 1983
■ Melbourne House releases the adventure game *The Hobbit* for the Spectrum. Wait, time passes, wait, wait, wait…



8 March 1991
■ Capcom releases the *Street Fighter II* coin-op into arcades. The fighting boom begins…



9 March 2001
■ A *Sonic* gaming low point is released as *Sonic Shuffle* for the Sega Dreamcast reaches UK shores.



10 March 1994
■ A retail version of the Sega Mega Jet, an in-flight console used on Japanese airlines, was made available to the public.



12 March 2012
■ Konami's *Silent Hill: Downpour*, the latest instalment in the survival horror series, is due for release on the Xbox 360 and PS3.



14 March 2002
■ *Halo: Combat Evolved*, the first game in the FPS series, is released as a launch title on the Xbox in the UK.



15 March 1991
■ The Barcode Battler handheld game debuts in Japan. Noodles become wizards and suppositories become warriors…



22 March 1997
■ The splendid *Tekken 3* coin-op from Namco is released into a musty old arcade near you.



23 March 2006
■ 11 years after release, Sony stops production of games for the original PlayStation. Eight months later, the PS3 is introduced.



23 March 2007
■ Europe sees the release of a game exclusive to the PSP, *Rainbow Islands Evolution*. Frankly, we wish we hadn't…



23 March 2012
■ Ryu Hayabusa is back in *Ninja Gaiden 3*, developed by Tecmo for the Xbox 360 and PS3.



25 March 2011
■ The Nintendo 3DS is released across Europe, with America receiving it two days later. Stock up on your headache tablets…



26 March 2002
■ *Star Wars Jedi Knight II: Jedi Outcast* makes its debut on the PC. Something, something, something, dark side…



26 March 2004
■ Ubisoft publishes the first in the *Far Cry* FPS series exclusively on the PC.



28 March 1995
■ The Apple Bandai Pippin, a disastrous multimedia system, is initially released in Japan. A mere 42,000 units later, it was discontinued…



28 March 2007
■ Rare treats us to an updated version of its first computer game. Sadly, *Jetpac Refuelled* is only available via Xbox Live Arcade.



29 March 2012
■ New issue of **Retro Gamer** hits the streets

VISIT RETROGAMER.NET/FORUM TO HAVE YOUR SAY

BACK TO THE EIGHTIES

CHARTS

JANUARY 1983

INTELLIVISION	
1	Dungeons & Dragons (Mattel)
2	Sub Hunt (Mattel)
3	Night Stalker (Mattel)
4	Lock 'n' Chase (Mattel)
5	Utopia (Mattel)

»[Spectrum] Imagine Software's first release was *Arcadia*. Shoot waves of fiendish enemies. Damn you wobbly pin level!



THE LATEST NEWS FROM JANUARY 1983

JANUARY 1983 – MB Games consoles itself, Nintendo plans own games machine, Imagine born, issue one of Page 6, the second coming of Horace and Ms Pac-Man and Atari finally gets it right. Richard Burton pops a power pill and feels fine…

News came rumbling from across the Atlantic that General Consumer Electronics, producers of the innovative Vectrex console, was on the verge of being bought out by Milton Bradley. Whilst this was bad news for GCE, it signified the possibility of the Vectrex finally making its way to Europe. It arrived in the UK in May and Japan a month later.

Having been released just two months ago in the USA, the Vectrex sold relatively poorly. Sadly, this was more to do with the impending videogames crash in North America than any shortcomings of the Vectrex itself. Having brought us the first vector graphics-based console (and the first to feature a 3D peripheral), it was discontinued approximately 18 months after release. It was short-lived but has since become a timeless retro gaming classic, and deservedly so.

Despite having produced fantastic arcade games over the last few years, rumours were rife that Nintendo were looking to produce their own cartridge-based games console. The rumours were correct, and the Family Computer/Famicom was released in Japan in July. After an initial slow uptake of the new console, not helped by the chip set causing the early production runs to crash, the Famicom was recalled and given a brand new chip set. It flourished on re-release. The UK finally got its own version, the Nintendo Entertainment System (NES) just over three years later.

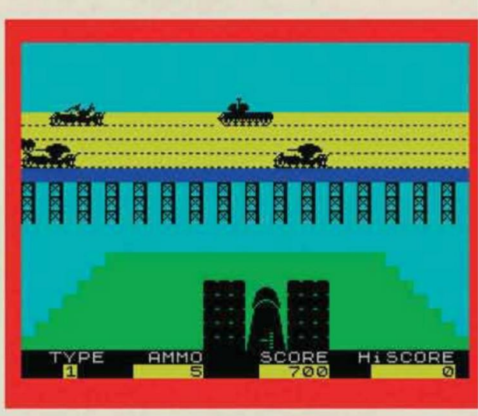
Key staff members left the Liverpool based software house, Bug-Byte, to make the short migration down the road to set up their own software house. Dave Lawson and Mark Butler formed Imagine Software and announced the release of their first game, a colourfully frenetic shoot-em-up for the VIC-20 and Spectrum entitled *Arcadia*, with ongoing plans to release two further titles every month.

At present Imagine's software would only be available via mail order with no plans to expand into retail. Conversely, Bug-Byte announced that they had decided to shut down the mail order side of their operation in favour of dealing with distributors and chain stores, as the demand for their games was so high.

The first three gaming offerings from games development new boys, DK'Tronics, were ready for release on the Spectrum. *Meteroids*, *Centipede* and *3D Tanx* were released with the latter the pick of the trio.

3D Tanx saw you in control of a gun turret of a tank with it trained on a bridge awaiting enemy tanks to cross. You would have to manoeuvre your turret and gauge the distance by raising and lowering it as you shelled the enemy tanks. It was a solid entertaining game that did cause a few muffled chuckles over the animation of the turret (see below). It rose and fell, looking not too dissimilar to a certain male appendage. Yep, it looked like a todger.

One of the biggest software houses of the time, Quicksilva, released its latest offering, *4D Timegate*. Although the premise of space battles with hoards of furious aliens was nothing new, the 3D graphics worked surprisingly well. Quicksilva were gaining a reputation of consistently producing great games and *Timegate* was no different.



»[Spectrum] Tanks shot their loads over the oncoming enemy – that was 3D Tanx.







SPECTRUM	ATARI 2600	MUSIC
1 The Hobbit (Melbourne House)	1 Pac-Man (Atari)	1 You Can't Hurry Love (Phil Collins)
2 Penetrator (Melbourne House)	2 Defender (Atari)	2 Down Under (Men At Work)
3 Black Crystal (Carnell Software)	3 Starmaster (Activision)	3 Save Your Love (Renee & Renato)
4 Hungry Horace (Sinclair/Psion)	4 Frogger (Parker Brothers)	4 A Winter's Tale (David Essex)
5 Spectral Invaders (Bug-Byte)	5 Pitfall (Activision)	5 Electric Avenue (Eddy Grant)

More simplistic than *Timegate*, but just as entertaining, was Melbourne House's second *Horace* game. The iconic blue blob of a character decided that skiing and crossing a dangerous road in the style of *Frogger* would be the way to go, and so *Horace Goes Skiing* was born. It soon became a firm favourite on the Spectrum. A Commodore 64 version was later released, but failed to impress.

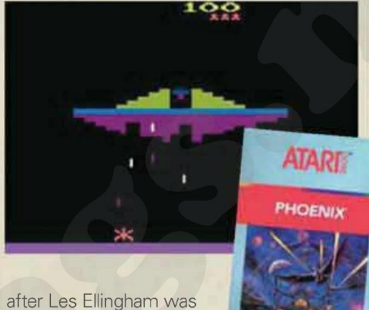
Two imminent arrivals on the Atari 2600 console were the eagerly awaited follow-up to Atari's version of *Pac-Man* and their take on the arcade game *Phoenix*. Everyone was hoping that many wrongs would be righted with *Ms Pac-Man*, after the first game was so disappointing. With its flickery graphics and uninspired maze design, the original *Pac-Man* was nothing short of a travesty.

Thankfully it appeared that Atari had taken on board the criticism levelled at *Pac-Man*, and the resulting sequel bore more of a resemblance to the arcade game we knew and loved, and it played much better, too. Having different maze designs for each level compared favourably with the arcade version, but it was the small attention to detail that made it feel like a real *Pac-Man* game. The inclusion of the floating fruit bonus was good to see, and being able to actually face up or down if you were going that way (instead of always facing left or right regardless of your movement, as you did in *Pac-Man*) was a great addition.

Phoenix was also released, and thankfully was a competent conversion of the coin-op. Unfortunately for Atari, Imagic's *Demon Attack* had also recently been released, and stole most of Phoenix's thunder by being a much more playable and fluid game. Still, Atari were warming up a freshly squeezed lawsuit for Imagic for breach of copyright.

There was more good news for Atari owners with the introduction of a new magazine with news about all Atari machines. Issue one of Page 6 was created after Les Ellingham was appointed newsletter editor for the regional Atari Birmingham User Group. Realising that there was opportunity to create something a bit more substantial than a localised newsletter, Les and his wife Sandy created the first issue of Page 6.

»[Atari 2600] Like a phoenix rising from the ashes of an overly expensive arcade conversion licensing deal came, er, Phoenix.



At 20 pages, including covers, it was small but filled a niche market perfectly. It kept growing and in 1987 Issue 29 weighed in at 84 pages, and finally became available to buy at newsagents. Despite Page 6's successful progression from newsletter to glossy magazine, it remained faithful to its core readership: the Atari enthusiast. Page 6's final issue was Issue 89, published in the autumn of 1998. A great innings for a great magazine.

JANUARY 1983 NEWS

On 17 January, breakfast television arrived in the UK. The BBC launched first, introducing us to the ingeniously titled *Breakfast Time* fronted by Frank Bough and Selina Scott. Popular lifestyle segments were hosted by personalities such as astrologer Russell Grant. A regular morning exercise routine hosted by leotard-wearing Diana Moran earned her the nickname of Green Goddess.



»Viewing figures pre-Roland Rat = 100,000. Post-Roland Rat = 1.8 million. Yeah! Rat fans!

Two weeks later ITV countered with their own breakfast show TV-am's *Good Morning Britain*. It struggled initially but soon began to catch up in the ratings war. This was in no small part to its newest presenter, a puppet called Roland Rat.

31 January saw a new law that made it compulsory for all British drivers and front seat passengers to use seatbelts, which used the "Clunk click, every trip" campaign, fronted by Jimmy Saville.

And on 23 January we saw the television debut of a new action series featuring a group of four ex-commandoes, sent to prison by a military court for a crime they didn't commit. They promptly escaped from a maximum security stockade to the Los Angeles underground. Today, still wanted by the government, they survive as soldiers of fortune. If you have a problem, if no one else can help, and if you can find them, maybe you can hire... The A-Team. The show became a worldwide hit. It ran for 98 episodes and five series, and spawned several novels, comic books, and a movie.

THIS MONTH IN...

POPULAR COMPUTING WEEKLY



PCW spoke to John Hollis at Quicksilva about games programming and design. "I have a sneaking suspicion that some games designers may not even have a computer," said John.



ATARI CLUB MAGAZIN



The first issue of the German publication featured a colourful article on the history of Atari with rare pictures of a range of the earliest Atari coin-op machines, such as *Space Race*, *Starship 1*, and *Quadrapong*.



ELECTRONIC GAMES



The pick of the US magazine's many category winners were Videogame Of The Year went to *Demon Attack* (Imagic, Atari 2600), Best Action Coin-Op Game was *Robotron* (Williams) and Best Arcade Conversion was *Frogger* (Parker Brothers, Atari 2600).



BACK TO THE NINETIES

NOVEMBER 1994 – Sega Saturn arrives, Secret Of Mana and Chrono Trigger square off, Pac is back and is pap, Thunder Rabbit and Superfrog battle it out whilst Warcraft makes its debut. Richard Burton and Leeroy Jenkins prepare for battle…

THE LATEST NEWS FROM NOVEMBER 1994

The big gaming news this month was the Japanese launch of the Sega Saturn console. It sold 170,000 units on its first day of sale and while this was perceived as an impressive debut, Sony's PlayStation was a mere couple of weeks away from release and many were waiting to see how Sony's machine would perform before deciding which system to throw their money at.

Games-wise, the Saturn had a solid start, with two of the launch titles being *Virtua Fighter*, Sega's own polygon kickfest and the beautifully immersive graphics-based adventure game *Myst*, from Cyan.

Although Nintendo's SNES had the Super FX chip, developers were seemingly reluctant to make use of the extra power to produce games that actually used it. Thankfully, one more game could be added to the small handful available, in the form of *Dirt Trax FX* by Acclaim.

Dirt Trax FX was a motor-cross racing game that allowed simultaneous two-player action. With a choice of eight riders, 22 courses and some excellent graphics work, the game promised to be something quite special when released. Sadly it would be delayed until summer 1995.

SNES owners with a penchant for RPG games started saving their pocket money and resigned themselves to no sleep, human contact or fresh air for a good few months, with the up-coming offerings from Square, who had finally announced that a PAL version of the RPG game *Secret Of Mana* would be available at the end of November across Europe. Not before time, too, as Japan and the USA had been enjoying their versions for over a year. The grey import market had been doing very well in the meantime.

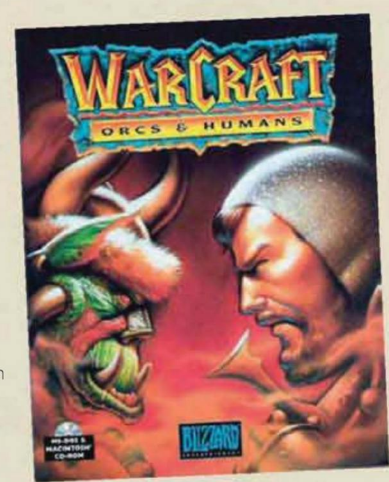
Secret Of Mana's story of the boy who finds a mucky old sword at the bottom of a river, and in bringing it back to his village brings monster-based mayhem along with it, getting him banished in the process and setting him off on his quest was finally here. *Secret Of Mana* had everything; three controllable characters, a strong narrative, some beautifully designed graphics. It all made for a terrific RPG; the game was quite simply superb.

Square hadn't stopped spoiling SNES owners just yet, with the news that their latest development was well underway and looking likely for a summer '95 release. At least it would give you time to complete *Secret Of Mana* before embarking on a RPG that was arguably better (and how we did argue about it…)

Chrono Trigger for the SNES was immense, and much of its magic still works today. It had seven playable characters travelling through time, trying to fix problems in the timeline in seven different eras, while picking up equipment and allies along the way. Simply, *Chrono Trigger* was and still is one of the best RPGs ever.

Pac-Man is back man and this time he's mooching around Pac-Land. This new Mega Drive game was *Pac-Man 2: The New Adventures*; a blend of arcade adventure with puzzle elements and the merest whiff of RPG. Pac-Man must carry out tasks for his family, but you don't control him directly but rather influence what he will do by using a slingshot to clear obstacles and point him in the right direction.

Unfortunately the game was just so pedestrian in every aspect, that your attention would wander to other more important things around you such as carpet fluff, that crack in the ceiling and how that milk stain got on the curtains. It was rubbish from start



»The next generation of console wars begins with the launch of the Sega Saturn. Sony's PlayStation would arrive next month.



»[SNES] *Secret Of Mana* and *Chrono Trigger* were released by Square in quick succession, great news for RPG fans.

»[Amiga CD32] It was no *Sonic*, but *Quik The Thunder Rabbit* turned out to be a very playable platform game for the CD32.

to finish, and the only vaguely redeeming feature of the game was the fact that the original *Pac-Man* game was hidden away as a bonus feature.

With sickeningly cutesy animal-based scrolling platform games still attracting good sales in a congested market, there was still room to crowbar a couple more protagonists into the mix. For the Amiga and CD32, *Quik The Thunder Rabbit* by Titus was hoped to be a Sonic equivalent. Although nowhere near that class, *Quik* definitely had some great plus points, with crisply defined graphics, particularly those of the enemy sprites, and pretty backgrounds backed up with some well thought out levels and gameplay.

Proving that this lucrative sub-genre still had cash-pulling potential, Team 17 re-released a title from only the previous year, *Super Frog*, to be played on the CD32. It was another terrific platformer, slick, fast-paced, and better than many of the similarly styled games released after it.

If cute wasn't your bag, then there was an excellent alternative to be found with *Warcraft*, released on the PC and later on the Mac. The first title released in what would prove to be a very lucrative, long-running series, *Warcraft* introduced us to the world of immersive real-time battles (and divorce lawyers).

Not since Westwood Studio's DOS game, *Dune II*, had an RTS game so championed the genre. *Warcraft* added online multiplayer facilities, and missions and skirmishes that appealed to a new audience as well as the die-hard adventure strategists. Needless to say, it was well received. The great success of *Warcraft* spawned several follow-ups and expansion packs to the game.

Nintendo lovers eagerly pawed the pages of *Super Play* to find out what was hot and what was snot in the games reviews section. SNES fans found the top rating titles this month to be *Street Racer* (Ubi-Soft), *The Adventures Of Batman & Robin* (Konami), *Sparkster* (Konami), *Brain Lord* (Enix) and *The Smurfs* (Infogrames).

And in the land of all things Mega Drive, Sega clearly came out ahead this month, with the top games being as follows: *Mega Bomberman* (Sega), *Probotector* (Konami), *Red Zone* (Time Warner), *Sonic & Knuckles* (Sega), *Dynamite Heady* (Sega), *Sparkster: Rocket Knight Adventures 2* (Konami), *Urban Strike* (Electronic Arts) and *Micro Machines 2: Turbo Tournament* (Codemasters).

NOVEMBER 1994 NEWS

»Alec Baldwin's turn in *The Shadow* didn't make a dent in the box office.

19 November saw the debut draw in Britain's first lottery, run by Camelot. An estimated jackpot of £7 million was up for grabs by correctly choosing six numbers from a selection of 49. Estimated sales for the first draw were approximated at around £45 million, with a proportion of sales going to charities and good causes, though The Retired Coin-Op Gamers Rest Home wasn't one of them.

On 17 November it was the world premiere of the latest *Star Trek* movie, *Star Trek: Generations*, which would see Enterprise Captains old and new, Kirk and Picard, join forces to defeat the suitably overacting madman who wants to kill literally everything. Patrick Stewart and William Shatner obviously played the Captains, with Malcolm McDowell as the mad scientist. Most of the cast of *Star Trek: The Next Generation*, including Chekov and Scotty from the original series, also featured in this silly but pleasant enough sci-fi movie romp.

18 November saw the movie release in the UK of a much over-looked but nonetheless influential comic book hero. Although not a critical favourite, *The Shadow* was a camp yet dark superhero romp. A wealthy man of the town, played by Alec Baldwin, uses secret identities to battle a mad warlord who wants to takeover the world and detonate an atomic bomb in New York. Despite *The Shadow* being less fashionable than other comic book heroes, the character created originally for 1930s radio dramas has since been recognised as being the inspiration for *Batman* and *V For Vendetta*.

THIS MONTH IN...

SUPER PLAY



Super Play, the SNES supporting arm of Future Publishing, contained a free taster issue of a forthcoming magazine called *Ultimate Future Games*. Covering everything new and exciting in console land, the magazine would make its debut in December.



PC GAMES

Interview of the month surely went to *PC Games* and their chat with Mark Hamill. When he wasn't waggling a lightsaber in your face or voicing The Joker in the *Batman* animated series he was acting in the full motion video segments of a new PC game, *Wing Commander* by Sierra.



COMMODORE FORMAT



Issue 50 of CF celebrated by doing a reader's poll to find the Top 50 Commodore 64 games. The top five titles were *MicroProse Soccer*, *Creatures 2*, *Creatures*, *Lemmings*, and *Mayhem In Monsterland*.



CHARTS

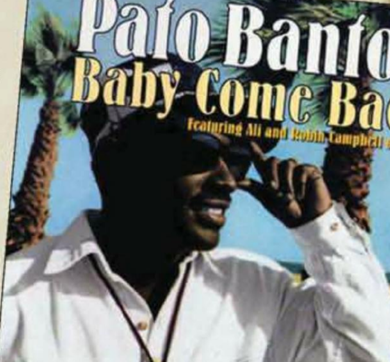
NOV 1994

SNES
1. Mortal Kombat II (Acclaim)
2. FIFA International Soccer (Electronic Arts)
3. Super Mario World (Nintendo)
4. Mortal Kombat (Acclaim)
5. Starwing (Nintendo)

AMIGA CD32
1. Arcade Pool (Team 17)
2. James Pond 3 (Millennium)
3. Bubba 'N' Stix (Core Design)
4. UFO: Enemy Unknown (MicroProse)
5. Cannon Fodder (Virgin Games)

AMIGA
1. On The Ball: World Cup Edition (Ascon)
2. Tactical Manager (Black Legend)
3. Frontier: Elite 2 (Gametek)
4. Sensible Soccer: International Edition (Renegade)
5. Lemmings 2 (Psygnosis)

MUSIC
1. Baby Come Back (Pato Banton)
2. Let Me Be Your Fantasy (Baby D)
3. Another Night (MC Sar & The Real McCoy)
4. Always (Bon Jovi)
5. All I Wanna Do (Sheryl Crow)

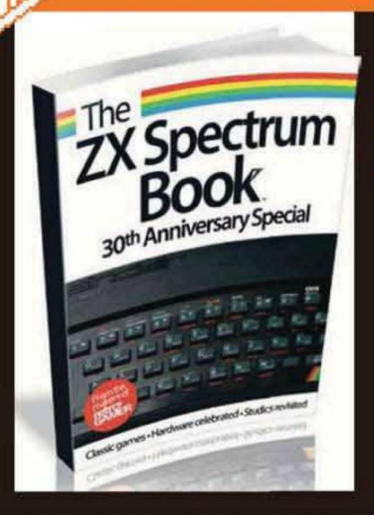




THE VAULT

TREASURES FROM THE RETRO CHEST

TREASURE OF THE MONTH



ZX Spectrum/C64 Anniversary Bookazine

■ **RRP:** £9.99

■ **Buy it from:** www.imagineshop.co.uk

Both the ZX Spectrum and Commodore 64 will be celebrating their 30th birthdays this year. To celebrate this historic occassion, we've put together a fantastic new bookazine dedicated to both classic 8-bit home computers. This fantastic flipper will feature Retroinspections, Collector's Guides and Top 25s on both machines, as well as in-depth articles such as Making Ofs, Company Profiles and Retro Revivals. It's available now for just £9.99.



Alex Kidd T-Shirt

■ **RRP:** $24.00 (approx £15)

■ **Buy it from:** www.meatbun.us

Master System fans will no doubt want to eat up this T-shirt up as ferociously as little Alex Kidd is with poor little meatbun he's holding in his big rock-murdering fists. The image is taken from the map screen from *Miracle World*, where Alex can be seen taking a well-earned snack break with either a greasy burger or low-calorie rice cake. Once again, Meatbun deliver an attention-grabbing design that is both poignant and instantly recognisable to fans of the character.

Sonic Money Bank

■ **RRP:** £4.99

■ **Buy it from:** www.forbiddenplanet.com

Not many people know this, but Sonic is one of the most frugal videogame characters there is. Should Sega ever decide to retire its spiny mammal and replace him for a slow red cheetah or something, at least he will be financial secure, having invested all his money into the solar panel installation market. If you want to trust your money with anyone, he's a pretty safe bet. Always bet on blue is his motto, despite the fact you can't actually do that on a roulette table.



Pac-Man Oven Gloves

■ **RRP:** £9.99

■ **Buy it from:** www.amazon.co.uk

It seems the peculiar on-going relationship between homeware and *Pac-Man* is as strong as ever. Arriving in the wake of *Pac-Man* cookie jars, ice cube makers and pizza cutters, this is now the new must-have cooking accessory for the *Pac-Man*-loving chef of your household. Not only do they protect hands from nasty oven burns, but they are also printed with a mixture of sprites taken from the seminal 1980 game, allowing you to dazzle friends with your cooking skills and love of old games simultaneously.

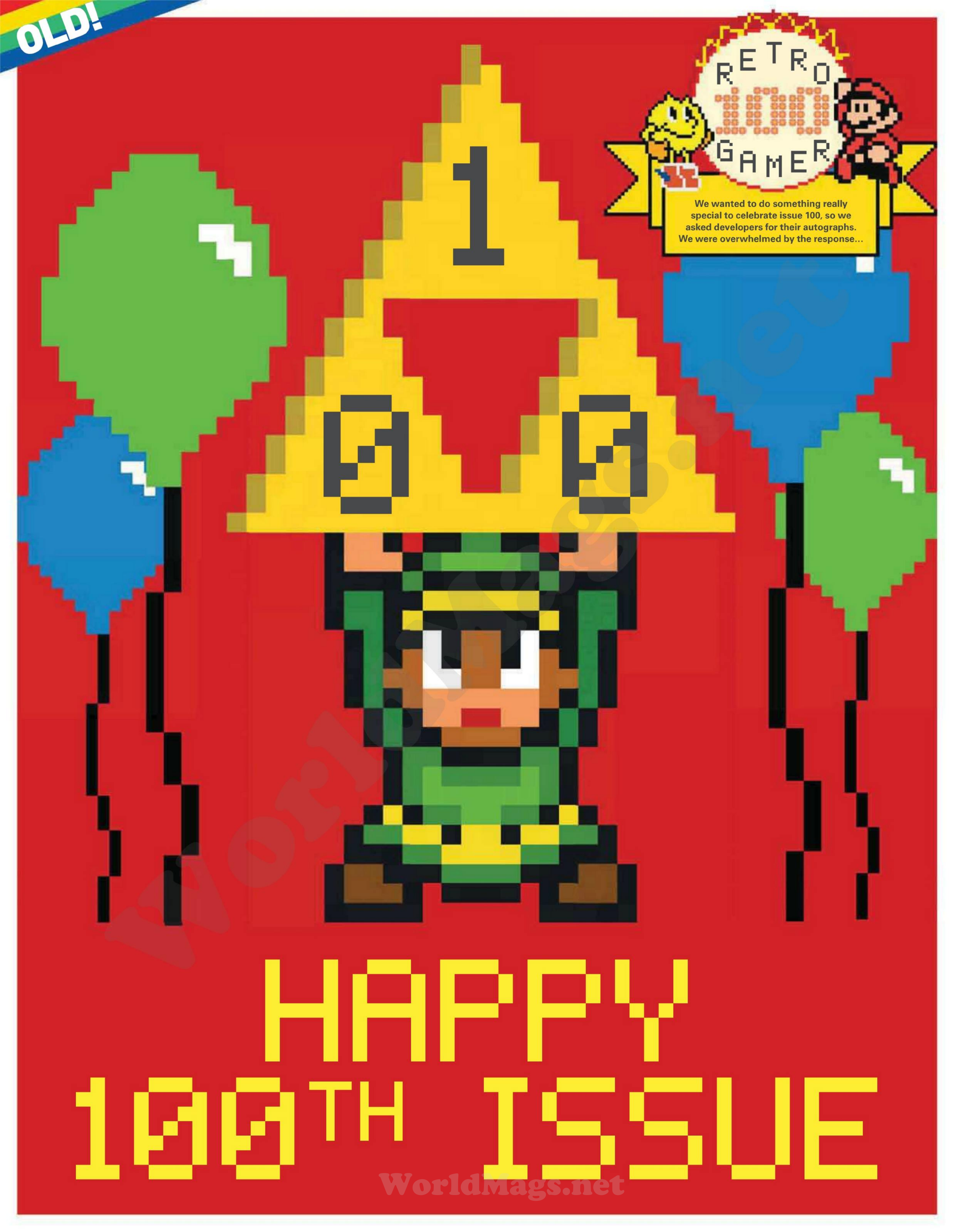


Retro Road Travel Card Holder

■ **RRP:** £2.95

■ **Buy it from:** www.retrogt.com

This cool card holder takes its inspiration from classic brawlers and platformers from yesteryear. A great range of games, from *Dragon Ninja* and *Final Fight* to *Ghosts'n Goblins,* are paid homage to. And that's just the front of the holder; there are even more on the back. So if you're any kind of retro gaming nut (which we're safely guessing you are), then we reckon these holders are a great way for you to add a bit of retro gaming muscle to your pathetically weak Oyster Card, bus pass and train tickets.



OLD!
RETRO 100 GAMER
We wanted to do something really special to celebrate issue 100, so we asked developers for their autographs. We were overwhelmed by the response...
100
HAPPY 100TH ISSUE

In a world overrun by metastasizing cruelty-free nanny-state vegan-villes and twittering social media bores, there is an oasis of insanity.

Where a pixel can be a pixel, where Pac Man can feast without guilt, where the princess can be saved (or not), and all manner of aliens gratuitously blasted into oblivion.

RETRO GAMER 4-EVER!!!!

Eugene Jarvis

CONGRATS ON YOUR 100TH! RETRO GAMER ROCKS AND BRINGS BACK A LOT OF MEMORIES OF THE PIONEERING DAYS OF GAMES AND GAME DEVELOPMENT.
ALL THE BEST, Steve Cou

CONGRATS! WOOT!
Trip Hawkins

Congratulations on your first century!
Cheers Andrew Braybrook

CONGRATULATIONS! 100 ISSUES! YOUR SUCCESS IS WELL DESERVED. HERE'S TO HUNDREDS MORE...

Congratulations on 100 issues celebrating our gaming heritage. Here's to the next 100!
David Braben

CONGRATULATIONS TO RETRO GAMER ON THIS MILESTONE. THANKS FOR CARING ABOUT THE OLD GAMES
Al Alcorn

Congratulations!
You now qualify to be featured in Retro RetroGamer magazine!
Gary Bracey

#100 and still in Pole Position - Congratulations!!
Archer Maclean
Cake to usual address, pls, ta.

Awesome job on getting 99 issues. Happy Oddversary
Stewart Gilray

Great Games Never Die.... not when there's Retro Gamer!
Congrats. on 100 issues!

Happy 100th RETROGAMER
Here's to loads more new stuff on the old stuff!
Will Overton

Retro gamer allows us all to revel in the glory of yesteryear
Congrats on reaching 100

Philip Oliver
AKA THE OLIVER TWINS

Congratulations to all at Retro Gamer on reaching 100 - a fantastic achievement and no surprise that your magazine remains so popular. We look forward to the bicentennial celebrations,

with best wishes

Charles Cecil

CONGRATULATIONS ON 100 ISSUES OF RETRO GAMER! THANK YOU FOR HELPING ME RELIVE SOME OF MY FONDEST GAMING MEMORIES!

Happy 100th Steve T

Jody Hindle.

Andy Chapman

NEW HIGH SCORE!

CONGRATS ON YOUR 100TH ISSUE FROM SUMO!

Phil R.

Simon M.

T. J. Springate

Retrogamer! Thank you so much for keeping videogame culture alive! Eric Chahi

Well done on reaching 100 issues, Keep up the sterling work,

Kudos for making it happen!

Keep working together for the future of Video Games! Congratulations on 100th issue!

FINAL FANTASY XIII-2 Yoshinori Kitase

CONGRATULATIONS ON THIS GREAT ACHIEVEMENT! RETRO GAMER ROCKS!

T. Iwatani
岩谷 徹

'PHWEE!'

OLIVER FREY

Congratulations!

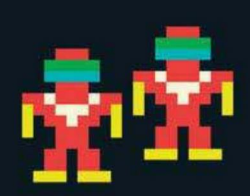
Do you get a telegram from the Queen?



RADNET EDITION
Enjoy exclusive access to RADNET and unlock an awesome mix of over 55 exclusive in-game events, themed rewards and friend vs friend score challenges
XBOX 360
PROTOTYPE
PS3
PROTOTYPE2
TBC
PS3
XBOX 360
XBOX LIVE
RADICAL ENTERTAINMENT
ACTIVISION
activision.com
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» RETROREVIVAL DEVELOPER SPECIAL

Robotron: 2084

BY EUGENE JARVIS, CO-CREATOR



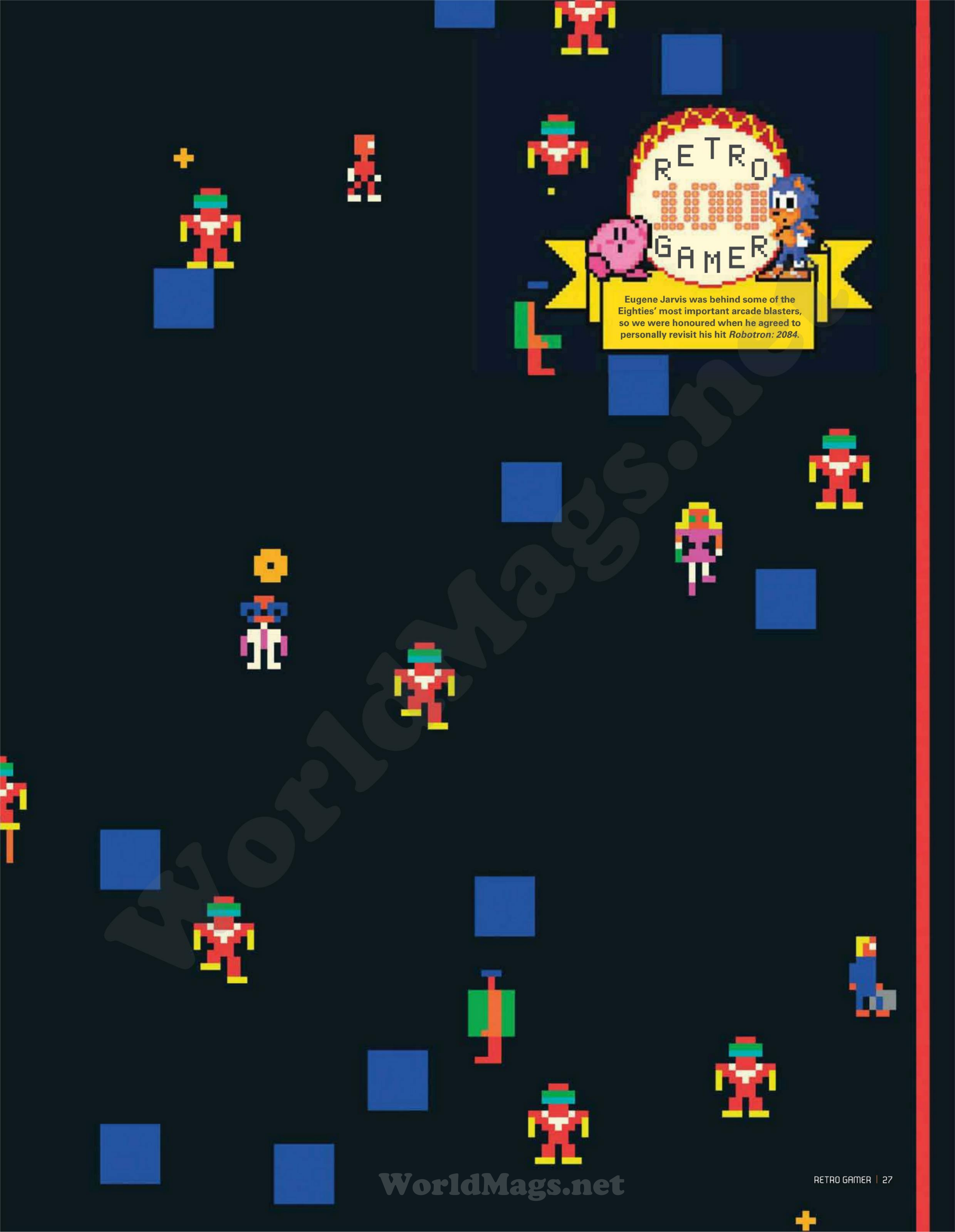
» ARCADE
» VID KIDZ / WILLIAMS ELECTRONICS
» 1982

For a game developer the coolest thing is that magic moment when a bunch of pixels come to life and become a game for the first time. The singularity where artificial stupidity morphs into artificial life. Often this takes place after a sweat-drenched deathmarch of thousands of man-hours of art, code, level design, testing and managerial malpractice. At this point the team is too exhausted and jaded to even notice or care. But sometimes you get lucky, and instead of being a black hole swallowing your massive brilliance, the game is born with almost no effort. Like a supernova it spews a million times more magic then was input. *Robotron: 2084* was such a beast. As soon as I screwed two Atari 2600 joysticks to the control panel and fired up the first demo the magic was there. To move and fire with complete independence, blasting your way through hundreds of robot grunts, was total sensory overload. There were three or four sounds, single channel audio, all volumes at 11, one weapon, one enemy, a randomly generated playfield, and no special effects. On paper *Robotron* should have been a crappy three-day demo. But it came alive. *









Eugene Jarvis was behind some of the Eighties' most important arcade blasters, so we were honoured when he agreed to personally revisit his hit *Robotron: 2084*.


inside the
ZX Spectrum



You can't have a landmark issue, without celebrating a landmark home computer. This is the full story behind Britain's best-loved home micro.

The ZX Spectrum is 30 years old on 23 April 2012. To celebrate, Martyn Carroll talks to Sinclair pair Richard Altwasser and Rick Dickinson to uncover the inside story behind Britain's bestselling – and perhaps best-loved – home computer

It's early 1980 and John Grant of Nine Tiles Ltd is leaving Clive Sinclair's offices at 6 King's Parade, Cambridge, with an A4 envelope stuffed under his arm. Inside that envelope is something amazing.

"It was a ZX80," says John, who was responsible for writing the machine's system software. "I remember thinking that in the envelope was a whole computer; something that would have filled a cabinet a decade before, and filled a room a decade before that."

The Sinclair ZX80 was indeed tiny, measuring a mere 208x159mm. It was also cheap. In May 1979, the *Financial Times* speculated that personal computers would drop to the £100 mark by the mid-Eighties, yet Sinclair managed that feat within a year. You could buy a pre-built ZX80 for just £99.95. This wasn't a revelation in home computing; it was a revolution. More than 100,000 ZX80s were sold in the first 18 months.

Yet the ZX80 was a primitive computer, even by the standards of the day. It featured a black-and-white display that shut off whenever the CPU was busy, no sound, 1KB of RAM, and a 4KB ROM chip, which held all of the system software, including a feature-limited BASIC. The following year's ZX81 addressed some of these issues, but it was still a very simple machine that looked childlike compared to the more sophisticated computers from the likes of Commodore, Tandy and Acorn. As Sinclair Research looked to the next model in the ZX line, it needed a computer that could hold its own in the fast-paced micro race, yet still offered excellent value for money. It needed to balance capability with cost, and the result of that careful consideration was the ZX Spectrum.

rainbow rising

Work on the Spectrum began in March 1981, immediately following the launch of the ZX81. While the internal hardware for the ZX80/81 had been designed by long-standing Sinclair engineer Jim Westwood, for the Spectrum that job was handed to relative new recruit Richard Altwasser.

"I joined Sinclair in November 1980," explains Richard. "It was my second job after graduating in engineering from Cambridge University – my first was leading a team in factory automation. The ZX81 was still in the early design phase when I joined, and I started on the ZX81 team under Jim Westwood. I remember one early occasion when Jim had built a wire-wrapped TTL prototype of the ZX81, which was documented with a hand-drawn schematic and many hand corrections and annotations. It didn't work. One morning he announced that he had to spend the day in London and asked me to look at the prototype. From the absence of much explanation, I doubt he expected me to make any progress. By the time he returned I had it working, surprising us both.

"Clive was keen to start work on a flat-screen TV. Jim had RF, TV and analogue chip design skills, whereas my knowledge and experience were almost entirely digital. Therefore, following the ZX81 launch, Jim was assigned to lead a team on the TV and I recruited and led a team on the ZX81 successor, codenamed Rainbow. I was tasked with project planning and managing the electronic design including software, the ULA [uncommitted logic array], the remaining hardware circuitry and the PCB. The major task was undoubtedly the ULA design, which was achieved without any computer schematic capture, simulation or layout."

Hang on – Rainbow? "A few of us favoured the name Rainbow," says Richard, "but I agree that Spectrum was better." The project was also named ZX82 at one point, but Richard reveals that there were a couple of reasons why this was dropped. "The primary reason was wishing to emphasise the colour display. A secondary purpose was not wishing to create an expectation of obsolescence within a year."

A quick look at the Spectrum's feature list guaranteed that the new machine wouldn't be superseded 12 months down the line. It used the same Z80 CPU as its predecessors, but the overall hardware spec was a significant step forward, with plenty of memory in varieties with either 16 or a generous 48KB, improved BASIC, sound output, a dedicated video chip and a faster tape interface. The chief new feature, however, was the high-resolution, eight-colour display. For this, Richard implemented a colour-coding scheme where a maximum of two colours (foreground and background) could be displayed in any 8x8 pixel square. This resulted in the Spectrum's

in the know

LAUNCH DATE: 23 April 1982
LAUNCH PRICE:
£125 (16KB), £175 (48KB)
DIMENSIONS: 232x144x30mm
WEIGHT: 552g
PROCESSOR:
Zilog Z80A (running at 3.5MHz)
RAM: 16/48KB
ROM: 16KB
ONBOARD LANGUAGE: Sinclair BASIC
DISPLAY:
32x24 characters, 256x192 pixels
COLOURS:
Eight available (plus seven variations)
SOUND: Internal speaker/buzzer
ASSOCIATED MAGAZINES:
Crash, Sinclair User, Your Sinclair



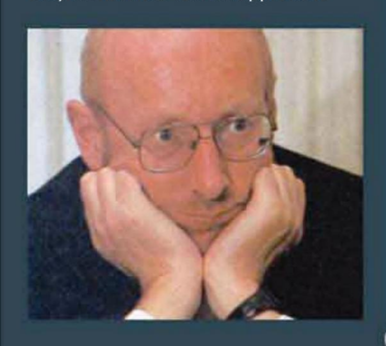
Sir Clive on the Spectrum

Sir Clive Sinclair has rarely spoken about his computers, and indeed we were unable to secure an interview from him for this feature. He did, however, speak openly to *Sinclair User* magazine in August 1986, not long after his computer business was sold to Amstrad.

Asked about the Spectrum and its popularity as a games machine, he said: "It was originally intended as a machine to teach computing, and the games market was rather secondary. Of course, it turned out the other way around, but that was not the original intention. I didn't plan it and I didn't particularly want to get into the games market, but it was an interesting business. I just don't think as a company we understood it very well." This probably explains why the Spectrum 128 wasn't the games-oriented machine that many people hoped for.

He also claimed that the success of the Spectrum held back the development of later machines, like the fabled Pandora and Loki. "We were getting a bit bogged down on the Spectrum; we were victims of our own past. If we ever did a new machine, we were more or less obliged to make it Spectrum-compatible."

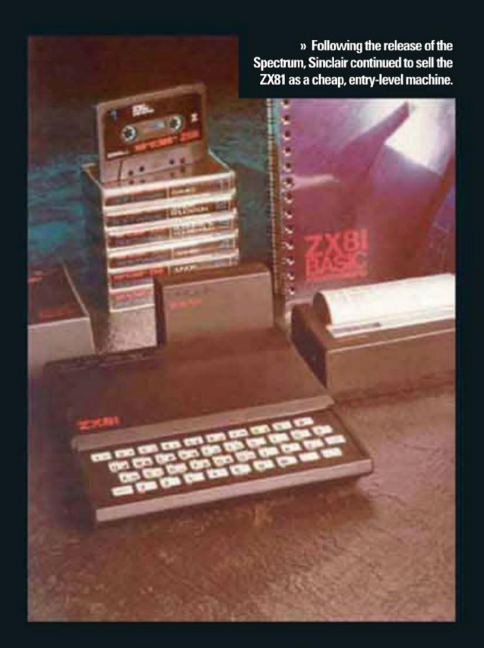
His most surprising admission occurred when he was asked about the Microdrives, which were widely viewed as flawed. "I'd defend them absolutely," he countered. "I think they were a marvellous approach!"



infamous attribute clash problem, but it was nonetheless a fast and efficient solution. "I dreamt up the attribute-based screen display," he says. "It owed a lot, in concept, to the TV Teletext encoding system. The innovative aspects were the ability to access the DRAM memory to fetch both pixels and attributes in a timely manner, whilst also meeting the DRAM refresh requirements."

Besides colour, the other key improvement was the extended BASIC. "We believed that owners would also become programmers. Therefore, ease of BASIC programming and a fast and highly functional BASIC interpreter were important. I drafted a spec proposal for the software and negotiated what could be achieved in the time with Nine Tiles. With software development, maximising design reuse is key to making the best progress with the least cost, time and risk, hence the Spectrum BASIC was an extension of the ZX81 BASIC."

Steve Vickers at Nine Tiles was responsible for updating his earlier ZX81 BASIC, which itself was adapted from the original ZX80 ROM code written by Nine Tiles' boss, John Grant. "They told us what the hardware did, and what was expected of the product, and we took it from there," says John, whose company was contracted by Sinclair to carry out the work. For the Spectrum, John was adamant that the code should be specially rewritten for the new, bigger-memory machine. "The ZX80 code, which had to fit into 4KB of ROM, was of course optimised for space rather than speed. So, for example, every time it accessed a variable it searched through the variables to find it. With only 1KB of RAM, there couldn't be enough variables for that to matter much anyway. The Spectrum had spare space in the ROM, and it had up to 48KB of RAM, so searching could take rather longer. I wanted to rewrite some of the things like the way variables were stored so that it would be faster, but Clive didn't want to incur the cost."



» Following the release of the Spectrum, Sinclair continued to sell the ZX81 as a cheap, entry-level machine.

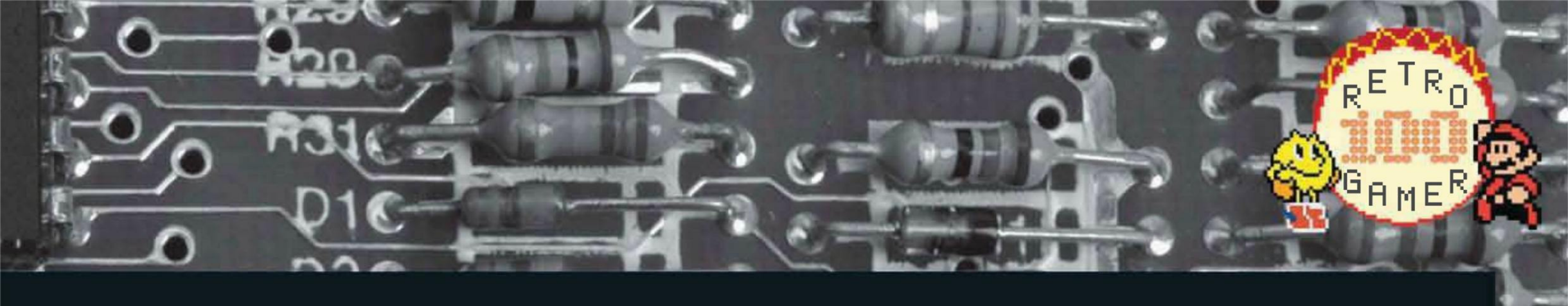
> "Shortly before the Spectrum launch, I spent time familiarising Clive with how the product worked"
> **Richard Altwasser**



» John Grant, boss of Nine Tiles Information Handling Ltd.

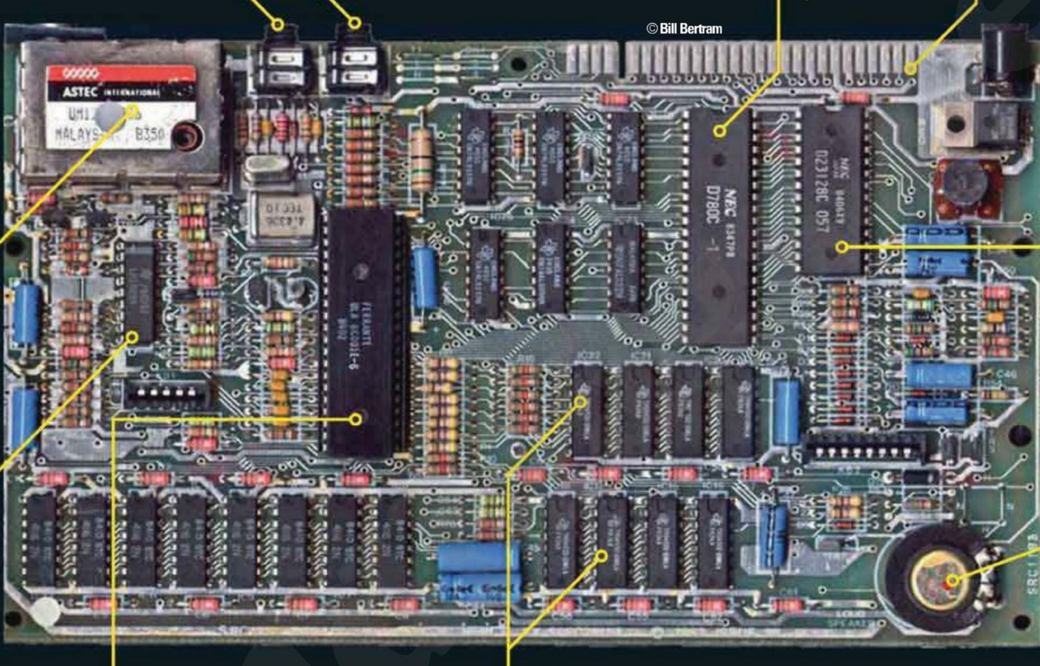
It would appear that when it came to his home computers, Clive was more savvy businessman than passionate inventor. Just how involved was he in the Spectrum project? "Clive took little interest in the electronics or software design or features," says Richard. "Shortly before the Spectrum launch, I spent time familiarising Clive with how the product worked from a user's perspective. He did, however, have an in-depth understanding and great interest in the current mode logic technology used by Ferranti ULAs and its benefits over alternatives at that time, as well as a clear grasp of component prices and manufacturing costs. Clive, therefore, greatly influenced the choice of the Ferranti ULA and other time and cost-critical decisions."

Work on the Spectrum continued throughout the year ahead of its planned launch in early 1982. Some reports have claimed that the development was rather haphazard, but Richard disagrees, saying that it progressed to plan. "If measured against the latest PRINCE2 methodology, the project would seem rather ad hoc. However, I would claim that we had a plan and that each person knew what they had to deliver, to whom, by when, and to whom they should turn with any questions, which I would submit is the essence of managing any collaborative project. On a personal level, Steve Vickers and I got on extremely well and this was key to our joint success. Integration debugging was constructive and collaborative. I believe that another key to success was that we agreed a demanding but realistic spec and schedule early on."



how it works

Your instant guide to the key components of Sir Clive Sinclair's machine



EAR/MIC PORTS
These sockets are used to connect a cassette recorder for loading and saving programs to tape. Tape speed is a respectable 1,500 baud.

MODULATOR
The video signal is passed to a UHF modulator so that it can be converted for display on a standard television set.

VIDEO CHIP
This chip takes the colour signals from the ULA and encodes them into a PAL signal, which is then sent to the modulator.

CPU
The processor is a Zilog Z80A (or clone produced by NEC) with a clock speed of 3.5MHz. This popular CPU was used in all Spectrum models.

EDGE CONNECTOR
The exposed edge of the motherboard is where peripherals are slotted, such as printers, joysticks and Sinclair's own Interface 1 and 2.

ROM
Sinclair BASIC is held on this 16KB ROM. It features around 1,300 free bytes – space intended for the delayed ZX Microdrive software.

Speaker
This internal speaker, or 'buzzer', produces one-channel, five-octave-range sound. It's controlled by the BEEP function in BASIC.

ULA
The uncommitted logic array, known as a 'glue chip' as it combines the functions of several chips and controls input/output functions.

RAM
Rows of RAM chips make up the user memory – either 16 or 48KB. Early 48KB models came with the extra 32KB held on a daughterboard.

case in hand

While Richard was working closely with Steve on the software, he was also in daily dialogue with in-house industrial designer Rick Dickinson. Rick joined Sinclair in December 1979, having graduated from Newcastle Polytechnic earlier that year, and was responsible for the case design of every Sinclair computer from the ZX81 onwards. He explains: "Richard and I had to work very closely at times because of the strong physical relationship between the electronics and what's happening on the outside. A PCB is not designed and then handed over to the 'casing' department – the two disciplines work and evolve the design in parallel.

"Due to the long tooling times required for injection-mould tools, the case design had to be completed long before the PCB design was finalised. This is still a problem in present day product design, because as the PCB design evolves it may need to grow or change shape, for example. With a fixed case design going through tooling, something like this could not be accommodated. So there's a lot of pressure on the electronics designer to commit with some certainty to the big stuff that can't be changed later."

Rick began to sketch out ideas for the Spectrum's aesthetics in the summer of 1981. As you might expect by looking at the finished product, he wasn't influenced or inspired by the work of other computer manufacturers. "In visual design terms, there were no close contenders to what we were trying to do," he says. "The only decent visual design around at that time for this kind of product came out of Apple – everything else was just churning over the same old uninspired design. As with the ZX81, when there's nothing else around with which to make a comparison, it really is back to basics to understand what it is you're trying to do and produce something that you feel confident is right. There are no means of measuring this.

"A logical approach to make a start is to define some constant physical aspects such as those that determine the minimum size and shape. For the Spectrum, the width was determined by the length of the keyboard, and the length of the keyboard was determined by what we evaluated was the minimum key spacing for reasonable data entry. The required surface area of the PCB was theoretically greater than that of the minimum-sized keyboard, and as I didn't want the Spectrum to be wider than the keyboard, the product had to therefore increase in depth. The minimum thickness was simply determined by what was on the PCB and where high components could be placed. So that provided the first pass of what the shape could be based on a minimum footprint.

"This created a small product indeed! Was it too small? The Sinclair ethos had always been

perfecting the prototype

These models from Rick Dickinson's collection were used to experiment with the detailing

1: **This early model**, hand-built by Rick, is all black and features dark blue keys. Nothing as yet indicates the computer's colour capabilities. The computer is now named the ZX82.





2: **Cream-coloured keys** are trialled and a space bar is added, before being dropped as Rick felt it increased the size of the machine too much. The word 'Colour' appears at the bottom right.

3: **The keyboard plate** was initially going to be silver. The Spectrum 'flash' is added. All seven colours were to be used for the flash, but Rick felt it was too fussy and reduced it to four.





4: **This was the** final model. It was professionally made so that it could be photographed and used for marketing purposes. At this point the design was in the tooling phase.

miniaturisation, but was miniaturisation applicable to a home computer? Smallness runs the risk of being perceived as toy-like or inadequate in performance, but it's possible to overcome this with diligent attention to design detailing, material selection and precision manufacturing. I think it's reasonable to say that Sinclair products generally looked like no other products, and perhaps that's because the design approach, regardless of the designer, had always employed a fanatical and painstaking attempt to produce something that was original, desirable and somehow just looked right."

With its curved edges, aluminium key plate and striking colour 'flash', the Spectrum was far from toy-like. It certainly looked more sophisticated than the ZX81, with the sleek design clearly emphasising the fact that this was a much more capable computer. And, of course, there was the iconic rubber keyboard that replaced the poor membrane alternatives used on the earlier ZX computers.

"We all knew that the market acceptance of a membrane keyboard was limited," says Rick. "Traditional keyboards were expensive, large, contained many parts, and just didn't fit the Sinclair ethos of pushing the boundaries forwards. Clive knew we needed a moving-key keyboard, but it had to be advanced or simplified in some way. Clive discussed some ideas with [R&D director] David Southward, and David developed a single-key prototype. It was a classic Sinclair move in the sense that it simplified a complex design from several hundred parts to just a few – and on paper it fulfilled the spec as it fundamentally had moving keys."

The thinking behind the keyboard reveals that Clive remained enthusiastic about design, even if he wasn't overly interested in the hardware and software features. "He was extremely concerned about how his products looked," reveals Rick. "Fortunately for me, I'd followed Sinclair products since I was at school and always loved their unbelievable smallness of size and overall elegance of design. I merely attempted to continue this design tradition – a kind of unbelievable technological capability encased in clean Bauhaus minimalism. Clive would spend a lot of time thinking and trying things out through all of the design stages, looking at models and discussing ideas, especially in terms of how the insides could be arranged to assist a particular design shape or concept. He knew what was going on, always with an eye open for improvements along the way."

ready for launch

Following a development period of just under 12 months, the ZX Spectrum was officially unveiled at the Earls Court Computer Fair in London on 23 April 1982. At the press conference, Clive took a swipe at the BBC Micro. "It's obvious at a glance that the design of the Spectrum is more elegant," he said, clearly still smarting from the BBC's decision to partner with Acorn for its Computer Literacy Project. "What may not be so obvious is that it also provides more power, more usable RAM, higher maximum RAM, twice as many colours on the screen at any one time. We believe the BBC makes the best TV programmes – and that Sinclair makes the world's best computers!"

The press largely ignored the comparisons between the two machines and took the Spectrum at face value. In a typically positive review, *Popular Computing Weekly* concluded: "This new computer from Sinclair clearly represents excellent value for money and will no doubt prove a great success." The 16KB model launched at £125, with the 48KB version priced at £175.

At the launch, Sinclair also announced that the ZX Microdrive storage system would be released later in the year. While Rick would work on the external design of this promising tape-loop device, Richard would leave Sinclair shortly after the Spectrum launch and go into business with Steve Vickers from Nine Tiles. The pair formed Jupiter Cantab and, in late 1982, released the Jupiter Ace, an 8-bit micro that featured Forth as its built-in language rather than BASIC. The Ace failed to find a market and the company went into receivership the following year.

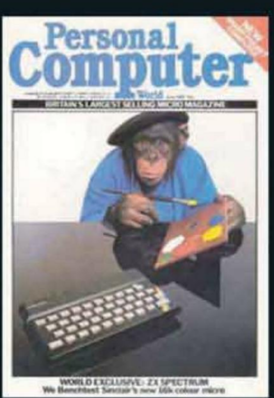
"With hindsight it is easy to see that Steve and I were competent engineers who had to learn quickly about business, manufacturing, sales and marketing," says Richard, reflecting on the Jupiter Cantab experience. "Much has been written about disruptive technology and the need for visionaries to invent new product categories by looking beyond logical, predictable extensions of



» Industrial designer Rick Dickinson standing outside the Sinclair Research offices in Cambridge.




» One of Rick Dickinson's first jobs at Sinclair was to design the ZX80 RAM expansion packs.





the status quo. Steve and I believed that the Forth language had substantial advantages over BASIC, the status quo, and was capable of creating a new category. We sought to buck the trend. There will be those who claim that we should have followed the trend and developed a better BASIC colour computer. Others might claim that we had the courage of our convictions and that pioneers cannot always be successful."

If Richard and Steve had indeed followed the trend then it's very likely they would have failed regardless, as the Spectrum quickly and aggressively dominated the UK computer market. Following some well-publicised teething troubles, full-scale production of the Spectrum began in June 1982. A price cut occurred in May 1983, with the 16KB model becoming the first colour micro to retail for less than £100, and sales rocketed to 50,000 a month. The Spectrum was well on its way to becoming Britain's bestselling computer. Project Rainbow duly delivered its pot of gold.

Yet the Spectrum's most incredible achievement was not its initial impact, but its enduring longevity. It was released into a volatile market where products typically had short life cycles, yet production of the Spectrum continued for ten years until April 1992. Yes, Sinclair – and later Amstrad – released updated models with bits bolted on, but the core hardware was essentially the same. And, of course, today the Spectrum is still a massively popular homebrew and hobbyist platform, with more than 100 new games released for it in 2011 alone. 30 years on and the machine's popularity shows no sign of waning.

For Richard and Rick, the Spectrum was just one of a number of computers they worked on, but at the time both could sense that they were part of something special.

"It's easy to claim to have been prophetic after the event," says Richard, "but I clearly recall that we felt we were at the start of something big, and that one day we would see computers in every home. We felt we were at the beginning of a revolution in computer literacy and accessibility, which simply required ease of use and affordability. This concept of a computer in every home was ridiculed by family and friends, but the ease with which young children could program our designs convinced us that it would happen.

"I remember the first day of the launch at Earls Court, when Steve and I took a break to get a coffee and were followed by a group of teenagers who, unaware of our presence, enthused loudly about every feature of the Spectrum. This convinced me that we had judged the market well. I continue to meet people who first cut their teeth in computing on the ZX Spectrum."

Rick adds: "I sensed something special was about. The Spectrum time was exciting, and it felt like the world was always waiting for us to come up with something new and better. There was a special kind of feeling in the air, but no hint of the magnitude of the outcome. I'm lucky to have been a part of it, and it's genuinely a thrill for me that the Spectrum has been and still is such an important aspect of so many people's lives, even if it's just a fond memory.

"Some might be dismayed to learn that the Spectrum was not my favourite piece of design work, compared to how I felt about the ZX81 or the QL. But I was not disappointed with it. I have since grown more fond of it, and perhaps that's because so many people express their delight in the product. So thank you to all those people.

"Who knows? If we'd designed a keyboard similar to all those other manufacturers, then perhaps people would not be so fond of the Spectrum. Maybe it's the quirky things that generate those nice fuzzy feelings. It would be an academic exercise, but I would like to produce a design concept for how the Spectrum would be today if things had continued, and also a design concept for how it might be in our imaginations. I think the latter would be more important."

> "I think it's reasonable to say that Sinclair products generally looked like no other products"
> **Rick Dickinson**

rubber love

One of the Spectrum's most famous features is its rubber keyboard. It might look like a simple design solution, but Rick Dickinson reveals that, in execution, it was far from straightforward.

He says: "As with all Sinclair products, often the technology was either not available or not yet mass-producible, so we had to pioneer new industries from time to time. The Spectrum rubber mat was definitely one of those. The rubber parts were manufactured next to moulding machines making rubber water bottles, and the pressed aluminium plate was manufactured by a cooker dial company. The trickiest part of integrating the rubber mat into the design was finding a method of holding it in place and covering the gaps between the keys. The rubber was silicon and at that time nothing would stick to silicon. The way in which the rubber operated left unattractive features between the keys, which needed covering up, hence the key plate came into being.

"Despite the usual criticisms, the keyboard was very successful in terms of delivering its intention: a low-cost moving keyboard, thus enabling many more people to afford to buy a Spectrum. It also sparked off a whole industry – the rubber technology under your current keyboard evolved from the Spectrum technology. Before the Spectrum, it did not exist. So the importance of a product may be more than just that product."



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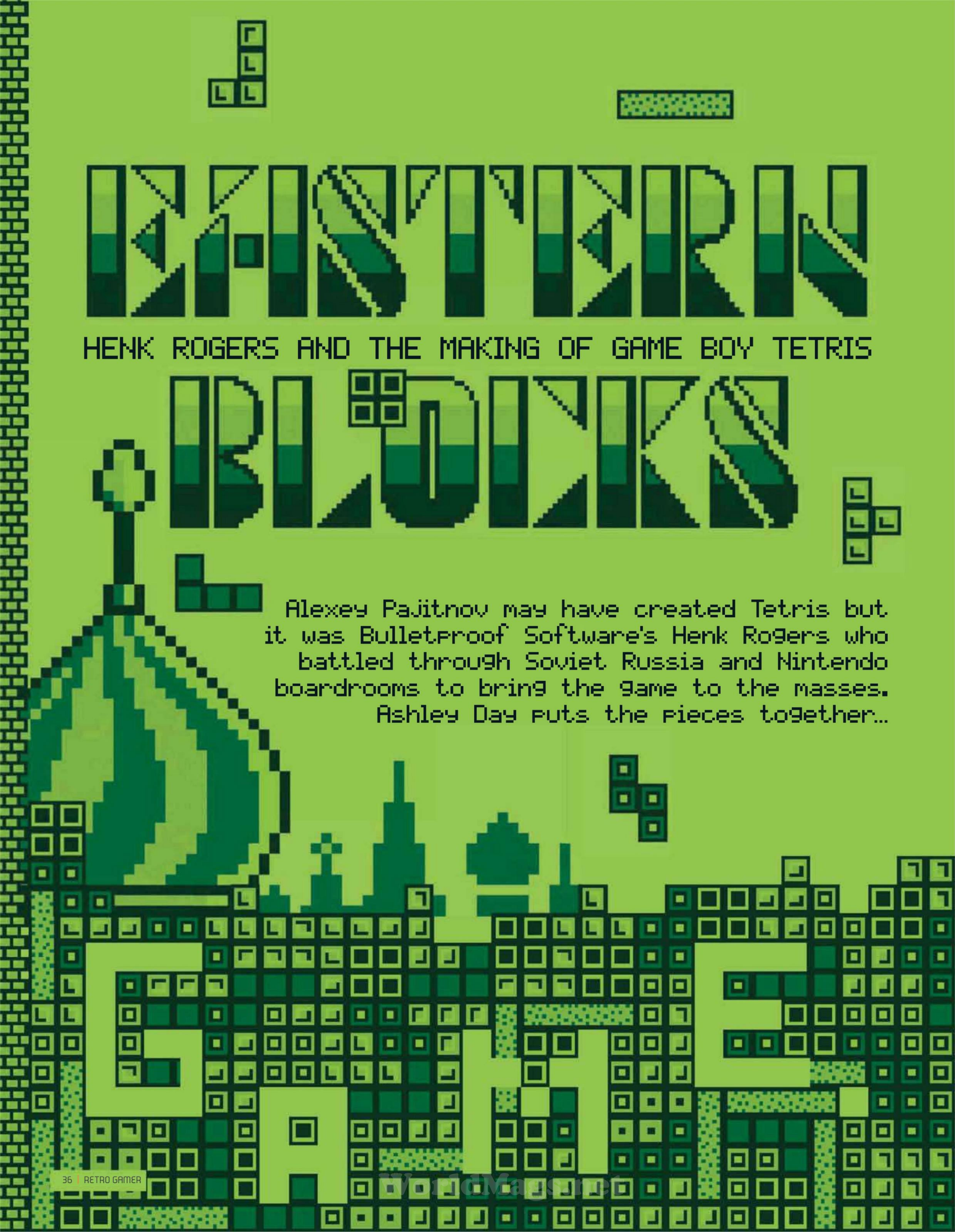
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EASTERN BLOCKS

HENK ROGERS AND THE MAKING OF GAME BOY TETRIS



Alexey Pajitnov may have created Tetris but it was Bulletproof Software's Henk Rogers who battled through Soviet Russia and Nintendo boardrooms to bring the game to the masses. Ashley Day puts the pieces together...





"I first saw *Tetris* at the Consumer Electronics Show in Las Vegas, 1988," says Henk Rogers, the man who had already changed the gaming world once by introducing the RPG to Japan with Famicom's *Black Onyx*. Little did he know that he was about to do it again by taking an amazing new Russian puzzle game and embarking down a path that would eventually bring that game to the masses. "I was going to trade shows looking for games to bring to Japan. Most of the games, you really can't get a feel for how they play in such a short time. You stand in line, it's your turn to play, you play a little and then you move on. Well by the time I'd played *Tetris* for the fourth time I realised I was hooked. I started going after the rights there and then."

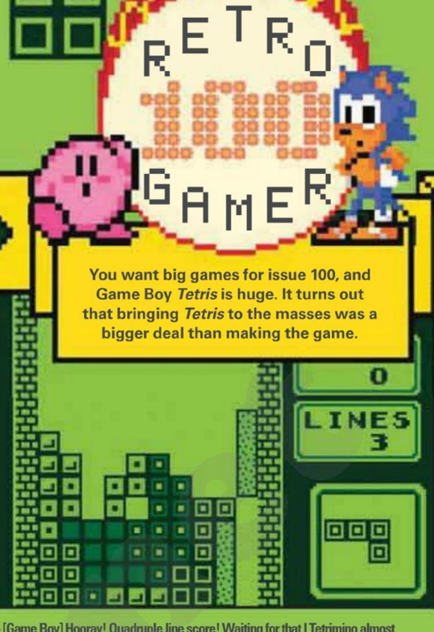
Before getting involved with the Game Boy edition, Henk secured the console rights to *Tetris* and produced a Famicom version for Nintendo. But initially, its success was far from assured. "That Christmas, *Tetris* had come out and I thought it was going to be a great opportunity," remembers Henk. "But for a game to become a hit you really have to sell about 100 to 200 thousand in your first order, and I'd managed to get 40,000. That's not even worth making. I went to [Nintendo president] Hiroshi Yamauchi and I said, 'Listen, I think I have one of the greatest games of all time here. I don't know what I'm doing wrong, maybe it's my sales guy or my marketing guy is ineffective, whatever, but it's off to a wrong start and I need your help, so can you do something for me?'

"He called in Miyamoto and said 'Is this really a great game?' and Miyamoto replied 'All of your accountants and secretaries are playing this game on their lunch breaks and after hours every day. It's a great game!' So then Yamauchi called in Hiroshi Imanishi, who was the number two, and said 'I want you to have our sales guy call every distribution company and tell them to order more.' I'm going 'Wow! There's some serious action going on there.'"

Yamauchi's typically fierce business acumen netted Famicom's *Tetris* another 30,000 orders, bringing the total number up to 70,000, which was still some way off the minimum 100,000 orders needed to generate a hit. With so many excess cartridges in production Bulletproof would have to start slashing prices or dumping stock altogether by January, a resort that Henk simply couldn't afford to take. "If a game goes into dumping and is sold for less than it cost then you're basically screwed!" exclaims Henk. "Nothing has ever come back from that situation. So I called my sales guy and got him to call the distributors saying 'This is not a game that sells quickly. Hold onto your inventory because it will come back!' This was something unheard of, and some of the stores actually did sell out by February and eventually all the stores were screaming for the game. We ended up selling 2 million."

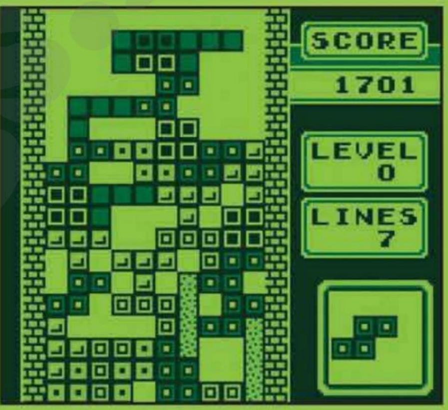
"I was unannounced, which never happened in the Soviet Union. You weren't supposed to talk to anybody"

If this situation wasn't stressful enough, Henk arrived in Russia that same February, uninvited yet determined to grab the handheld rights to *Tetris* for Nintendo's Game Boy platform. "That was my first time there and it was my reason for going. In February, with a tourist visa, I landed in Moscow and started looking for Electronorgtechnica. And I was unannounced, which never happened in the Soviet Union. You weren't supposed to talk to anybody, let alone do any kind of business with anybody, and this was a government organisation. I walk into this place unannounced and they're going 'who the hell are you?' I said, 'I'm the guy who publishes *Tetris* in Japan. I want to talk to somebody about it.' The guy, Mr Belikov, who ended up negotiating with me eventually got



You want big games for issue 100, and Game Boy *Tetris* is huge. It turns out that bringing *Tetris* to the masses was a bigger deal than making the game.

» [Game Boy] Hooray! Quadruple line score! Waiting for that I Tetrimino almost always pays off if you're aiming for those really high scores.

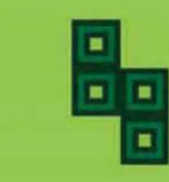


» [Game Boy] Some games of *Tetris* last for hours. This game was not one of them.





HENK ROGERS AND THE MAKING OF GAME BOY TETRIS





The outside world

Henk Rogers recalls Alexey Pajitnov's first trip to Japan

"HE DIDN'T HAVE any first-hand knowledge. The first time I brought him into Japan and we went into a supermarket, his jaw dropped. His reaction was like 'Oh my God!' that this could possibly exist. If you wanted an apple in Moscow you had to stand in line with a hundred people and wait for them to call you up. You had no choice. And there's no sign in that window saying 'apple for sale'. Word gets around and when you see people queuing you know there's something for sale there. Now here he was in a supermarket surrounded by piles of fruit, and people could just pick the ones that they wanted. And these were ordinary people. They weren't rich and it wasn't a movie set. Up till then he kind of thought that all these things were like movies; they didn't actually exist, they were just props in a movie. But then he realised, oh my God, all that stuff you see in a movie actually exists. I think there were tears in his eyes."



"A little while later, somebody came down the stairs and asks 'who the hell are you'. I explain and say 'I publish the Nintendo version of *Tetris* in Japan'. And he says… 'We never sold those rights to anyone'. Well, holy crap! I had 100,000 cartridges in manufacturing, which means that I've borrowed 2 million dollars from the bank, using all of my in-laws' land as collateral, and it turns out I have to bury those cartridges. I was really screwed… There was no way I could pay them back. So I said 'Listen, I want to talk to somebody about it. And sure enough the next day I was given the third degree for three hours. Again, there were the guys from the ministry, the guys from KGB and there was [*Tetris* creator] Alexey Pajitnov. He was in the room! The ministry knew nothing about the game and the only one who knew anything about it was Alexey. I could actually have a decent conversation with him about it. I was the first guy he met from outside the Soviet Union that actually understood anything about the game at all."

"I rented an interpreter and a car with a chauffeur. In retrospect, the interpreter was probably KGB"

into a lot of trouble for meeting me. They grilled him! They said, 'how did you get in touch? You must have had secret communication with him.' They bugged his room and listened in on his conversations, to find out how the hell he found me when, actually, he had nothing to do with it."

So how did Henk manage to track down the owners of *Tetris* against such resistance and suspicion? "I rented an interpreter and a car with a chauffeur. In retrospect, she was probably KGB. She knew everything about everything and already knew who I was and what I was looking for. She would have the answer to my questions before I'd even asked them. So, they drove me to the Ministry Of Software on the Thursday, the day after I'd arrived, but she wouldn't go in with me. I said, 'Why not? What are you talking about?' She said, 'You don't have an invitation. You're not supposed to go in there. And I can't go in there.' 'But you're my interpreter', I said. Then I thought 'Well, I didn't come all the way to the Soviet Union, thousands of miles, to be stopped by a door.' So I just walked through that door. I said, 'I want to talk to someone about *Tetris*.'

Henk's' friendship with Pajitnov, and his persistence with Electronorgtechnica, eventually paid off and he returned to Japan with the rights to produce the first officially licensed handheld edition of *Tetris*, which would be programmed by Nintendo. "I came up with the innovation of which buttons to use," says Henk. "I thought that I had to make the interface a certain way, to match the way the PC game worked. The way the PC version worked, you have a left, a right, the middle button is rotate and then the space bar is hard drop. So if you flip that and transfer it to the little Nintendo controller, you've got left, right, pull down to rotate and then the fire button will give you a hard drop. That's how it translates, and I thought that didn't make sense, that the movement of the piece should all be on the left hand and rotation of the



piece on the right hand. I asked my programmers to make it that way but when we sent it to QA everybody hated it. But of course, if you're in the middle of playing a game and all of a sudden the gas pedal and brake are reversed then nobody can handle that. And, in fact, that's exactly what Nintendo did, putting the movement and drop on the D-pad and left and right rotation on the two buttons. They also added a soft drop to the D-pad. And that was one of the complaints about it, that you'd move left and right and every once in a while accidentally hit the down button and cause a hard drop. But Nintendo added the soft drop so it would only drop a little faster rather than instantly. You could still control it after hitting down by accident."

Porting *Tetris* to Game Boy should have been a simple affair, but there was another complication. "The approval was meant to be done on a Friday and then the game would go to mastering on the Monday, so there really was no time," recalls Henk. "So on Friday I get the game and I'm playing, on a Game Boy, and it feels like one of the pieces is coming up more than the others. It's supposed to be random, a one in seven chance of each piece coming up at any given moment. So I told my QA guys, 'Give me the statistics on how often each piece comes out.' And, sure enough, it turns out that one of the pieces is coming out twice as often as the rest. So I called Nintendo and said, 'This is unacceptable. The Russians are never going to allow this!'

What Henk wasn't telling Nintendo, is that the Russians didn't actually require final approval. "I pretended, because the rights came from me, that I had to get approval from the Russians, which I didn't because no one there knew a damn thing, and we didn't have the time to send them the game then wait for a reaction to come back. But they didn't understand the game anyway, so it didn't matter." Instead, Henk relied on his own instinct. "There really is no other game that requires a real random number generator," he continues. "If one too many stars come up in *Mario* nobody is ever going to know it was a mistake, it just seems like the game was designed that way, but in *Tetris* you'd know. So Nintendo's programmers came to my office in Yokohama from Kyoto, two guys come in and we sit there and think of how to fix it. For them to write a new random number generator on Saturday, ready for mastering on Monday was unthinkable. So I said, 'It's piece one that's coming up twice as much as the rest, so this is what you do. When you roll a one it means it's piece one. The next time you roll a one, you add one. The next time you roll a one, you add two, and so on. That way the error in the random number generator will be spread across all the pieces.' So that's what they did and then you couldn't tell that it wasn't random. So I approved it and they went back very happy."



» [Game Boy] You're playing the music in your head right now, aren't you?

And with that, one of the greatest handheld games of all time was completed. There's a little epilogue to Henk's *Tetris* story; the staggering decision to give away this fantastic game for free, to everyone in the west who bought a new Game Boy. "I think I was in Redmond talking with Nintendo in January and it seemed like Game Boy was the best platform for *Tetris*, they were made for each other. [Nintendo's US president] Minoru Arakawa said 'Why shouldn't I pack in *Mario*?' I said 'Well if you want to sell Game Boy to little boys then pack in *Mario* but if you want to sell Game Boy to everybody then pack in *Tetris*.'"

And that's exactly what happened. Game Boy and *Tetris* went hand-in-hand, and with sales of 30 million, they put both game and hardware into the collective consciousness of a generation. Henk Rogers now runs the Tetris Company alongside Alexey Pajitnov, licensing *Tetris* and standardising its rules for future generations. 24 years after Henk first got hooked on *Tetris*, it seems he still can't put it down.

Block Rocking Beats

Henk Rogers explains the origin of that catchy Tetris theme tune

"THE THING ABOUT music is that there are rights issues [with licensed tracks] or you have to create something good enough, so I told my guys 'Find me a Russian folk song', because those things are free, they're public domain. And the fact that they've lasted hundreds of years means that they must be good. And yet people in the west haven't heard them as much as the people in Russia have, so let's give it a shot. We tried it and it was okay, people didn't object to it. And it ended up becoming a 'have to have' together with Tetris; people started identifying the game with that music, which is a good thing. But it turns out that they weren't all folk songs. One of them was a soldier singing to his girl while he's fighting, hoping that he'll make it back. If I'd have known what the words were… I had no idea."



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THE MUSIC MAN: *An interview with* ROB HUBBARD

Rob Hubbard sparked musical interest in a generation of C64 gamers and brought filmic themes to the limited sound chips of early home computers. Speaking to Craig Grannell, Rob reveals insights into composing, his pioneering work in videogame music, and his thoughts on people still listening to his C64 classics today.

"Games were a last attempt to do something with computers." These aren't the words you'd expect to hear from one of the biggest names from 8-bit gaming, but a few years into the Eighties, Rob Hubbard's interest in computing was starting to wane. The game he'd made hadn't exactly been critically well-received. Even worse, the company he was working for went bankrupt, wiping out months of effort in an instant. But his creation had a saving grace: fantastic sound, which was ahead of what anyone else was then making on the C64 – and every other home micro of the day. "I thought at that moment, that's what I'm gonna do: music," remembers Rob.

In a relatively short space of time, Rob had come full circle. He grew up in a mildly musical household – his father played the piano – and his own interest in music grew from an early age, not only in playing but also composing. "I started writing when I was about eight years old, just little riffs and tunes," says Rob. "I was learning formal piano at the time, which I did until I was about 15. I also started learning to transcribe rock and jazz solos by ear, and continued to write during my teens."

By the time he was in his late teens, Rob was involved with various bands – "One was a prog rock band, but we mostly just did covers and rock music" – while continuing his long-standing fascination with keyboard-based instruments. "I used to love the old Hammond organs – they have a great sound and are fun to play," reminisces Rob. "I used to like the early synths too; the Korg synths, Pro 1 and Yamaha DX7 were all classics. I had a Moog that also sounded great, but it wouldn't stay in tune!"

Despite Rob's love of music, he ended up studying electronics at university, which he apparently hated. Accordingly, he spent much of his time in the music department, and once he was done with university, another band soon beckoned. However, Rob had caught the electronics bug. Living in a house full of synths, keyboards and drum machines, he started reading electronics mags and building various kits. Rob also became fascinated with articles that spoke about computers affecting the future of the music industry.

Rob Hubbard is a fiercely private individual, and very hard to get hold of. He agreed to a one-off exclusive interview for our 100th issue.

» [C64] *Arcade Classics by Firebird* is a good example of Rob's sampling experiments, a rocky SID tune accompanied by a crunchy sampled guitar.

» [C64] Rob immortalised in pixel form as part of Stoat & Tim's fab Compunet demo *Thrust Concert*.

> He became 'a complete and utter fanatic', working late into the night, mastering BASIC and then Assembler

At the time, the UK computer market appeared saturated, with a dizzying array of platforms on offer. Despite flirting with the idea of a BBC Micro, Rob ended up buying a C64, largely due to its then-advanced sound chip. He set about figuring out how to make it do things, a challenge compounded by the alien nature of programming. In a seminar at Assembly 2002, Rob remarked that he "was determined that this little box wasn't going to make me look like an idiot." He became "a complete and utter fanatic", working late into the night, mastering BASIC and then Assembler. "I saw the possibilities of the machine," says Rob today. He adds that he had also started working on educational software, but that no-one was picking it up. "It was ahead of its time, but I couldn't sell it." And so we return to Rob's statement at the start of this interview; games were a last throw of the electronics dice, and one that seemed doomed.

That was, until it was apparent to those in the industry that the music and sound he'd created was exceptional. "I started sending out demos, and the work really started to pour in once I got a couple of games published," recalls Rob, referring to his earliest game soundtracks for the C64, *Action Biker* and *Thing on a Spring*. "And I stopped doing other work and projects, except for live gigs." The dual background in music and electronics was a big benefit: "The problem in creating music for the C64 was that you had to be a tenacious 6502 programmer to get anything to happen. And to get the most out of it, you had to be an accomplished musician as well."

Although Rob's early games offered simple tunes, he said at Assembly something strange happened around the time of *The Last V8*, a game he worked on for Mastertronic: "They were letting me write anything I wanted to and everyone thought it was just fantastic." Writing for games had suddenly turned into a dream job, where Rob was getting paid to compose whatever he wanted to. Although he's keen to point out to us that he didn't work in isolation; "I'd talk to the programmer and publisher, get a demo and try to do something to fit everyone's needs and that of the game. Sometimes they'd want something specific, but other times I got that free hand to do what I wanted."

Regardless of the type of music that a publisher required, Rob's composition methods were similar. "For writing, there are a few things you can do, but it's mainly just hard work and perseverance," explains Rob. "If you are doing a

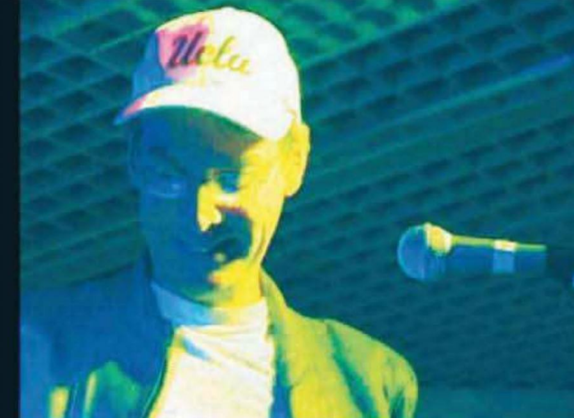
Back in Time



THE END OF the Nineties saw Chris Abbott (c64audio.com) on a quest to re-imagine C64 tunes with more of a modern production value. For *Back In Time*, Rob Hubbard soon became involved. "I sent him MIDI files in summer 1997, and he emailed back saying he could improve them," recalls Chris. "I supplied what I had for *Delta*, *Crazy Comets* and *Monty*, and he sent back something which was supercharged! Rob's work improved the tracks out of all recognition, and these were largely responsible for everything that came afterwards, including the subsequent *Back In Time* albums and live events"

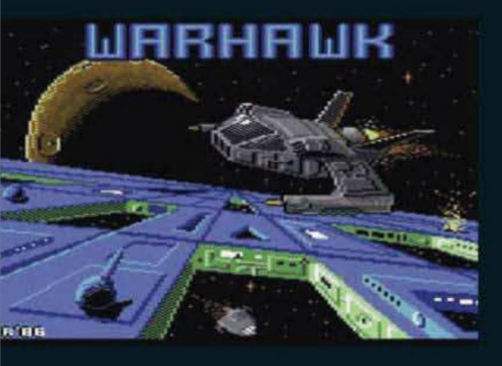
Chris remarks that *Back In Time 2* was 'Hubbard-lite', in part due to Rob not being happy with early versions of the tracks, but the third album of the series included a number of his classics reworked, such as *Delta*, *The Last V8* and *WAR*. "I flew to California on holiday in 2000 and met up with Rob in San Francisco," remembers Chris. "We looked around EA, had lunch, and went to the studio where he was working with Steve Scherer on *WAR*, and he gave me his handwritten score!"



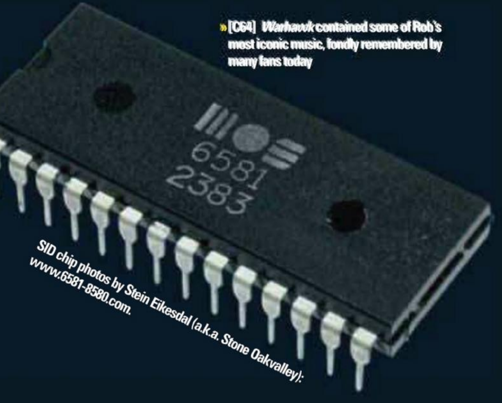


» Around the time of *The Last V8*, Rob realised he was in his dream job, writing pretty much whatever he liked – and publishers and fans were lapping it up.

“It was probably the most fun I ever had in the videogame business, because of that absolute freedom”



» [C64] *Warhawk* contained some of Rob's most iconic music, fondly remembered by many fans today



SID chip photos by Stein Eikesdal (a.k.a. Stone Oakvalley): www.6581-8580.com.

lot of writing, it does get easier, and sometimes I'd look at things I'd written in the past and use them as starting points.” Rob admits that music of the age also inevitably inspired a number of his videogame soundtracks: “It was really Eighties music that influenced everything, along with requests to do something like an existing piece or song. This could be anything from Jarre to bands like The Police and the new romantics, through to film and orchestral music. But you were also severely limited by the machine itself, you only had three voices to play with. This meant you were forced to write in a certain stylistic way and couldn't branch out into certain styles.”

A lack of the type of sequencers modern games musicians take for granted also had an impact on the music Rob created. “I used an assembler for everything, and I'd load a machine-code monitor and display the bytes in real time,” he says. Code would be edited in real-time, altering notes and other settings, with a track typically being worked on in repeating four-bar sections. Once a part was sounding good, Rob would move on to the next section. According to the man himself, *Kentilla* – “lots of smaller parts that were strung together to form a longer piece” – was a tune that successfully emerged from this method, but more complex and pop-oriented compositions also materialised. Today, *Sanxion* remains a favourite: “I hated that tune at first, but grew to like it by the time it was finished. I don't know where the solo came from, but I think it's cool!” In general, though, Rob tells us that he was always “just trying to be melodic and write enough variations to make a tune less repetitive”.

Another means by which Rob achieved this goal was by never stagnating. Instead, he constantly improved both his programming and his musical technique. “When you play, you are forever evolving in your tastes, and your playing changes too,” he explains. And on the technology side, Rob and other C64 musicians were always looking for ways to manipulate and exploit the C64; to make it do something it wasn't designed for, especially poking around where Commodore had said not to. This eventually led to the discovery of samples, which Rob mostly used to add meatier drums and rock guitar power chords to compositions for the *Skate Or Die!* and *Arcade Classics* games. At Assembly, Rob remarked that it's now apparent (although it wasn't necessarily at the time) that he and others worked on a lot of pioneering output regarding videogame music, in terms of both technology and the audio itself. “The sense of freedom people had in those days was just extraordinary, because you could branch out and do pretty much whatever you wanted to,” he adds. “It was probably the most fun I ever had in the videogame business, because of that absolute freedom.”

However, in the late Eighties, Rob decided to voluntarily give up many of those freedoms that he'd enjoyed. He ditched the freelance lifestyle and moved to the US, to work exclusively for EA. “Back then, EA was a very forward-thinking company that was run by Trip Hawkins. They had a clear vision for the future and had some very smart people working for them,” says Rob. “I did a contract for them in 1987 and they then offered me a job and the move to California. It was a fantastic experience, and a great place to live and work.” Although Rob continued to work on game soundtracks, his role within the company gradually shifted. “Over time, EA grew and started to contract out some music and sound design, and so that changed my position in the company to more managing.” And while Rob leapt at the chance to live in the US, he has in the past revealed that the experience left him culturally isolated, away from the primarily



The best of Hubbard

We asked Retro Gamer forumites for their favourite Rob Hubbard C64 tunes and what they relished about them. Here's the top-five:













1 Monty On The Run

THE MONTY SOUNDTRACK evolved from a tape of the radio show *Devil's Galop,* sent by Gremlin. Rob added new parts and a solo to take advantage of a new pitch-bend routine: "I coded a guitar-type solo I worked out on a piano until it approximated what I heard in my head". According to forum member Mayhem, it "blew away every other SID made by that point, and it still sounds wonderful."



2 Sanxion Loader

INSPIRED BY JEAN Michel Jarre's *Zoolook*, this quirky pop song also infamously made its way in full synth form on to the very first Zzap!64 covertape, whereupon lots of people tried to load it into their C64s and complained that it didn't work. "This is Hubbard at his peak on the C64," Antiriad2097 thinks. "It's complex and multi-layered with that distinctive SID phasing sound."



3 Delta

IN THE SIDPLAY STIL, Rob explains *Delta* was "based on this minimalist composition technique inspired by [Philip] Glass and a bit of Pink Floyd." It required custom code, was tedious to debug, but the result was perhaps the most epic soundtrack on the system. "Oozing atmosphere and making the SID do things I didn't think it could, this has got to be the all-time greatest," agrees kelp7.



4 Commando

ROB SAYS HE was bought a train ticket by a desperate Elite; listened once to the arcade soundtrack, then worked through the night. He completed the music and effects by 8am, blasted the tunes from every C64 in the building, then left for home! "It's a nice cover of the arcade original, but it has more of an edge of urgency about it, making it, for me, better," says forum member Mire Mare.



5 Crazy Comets

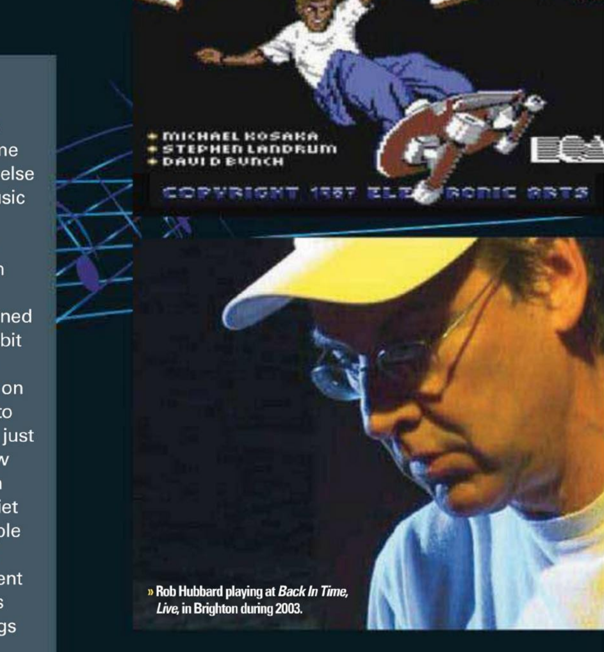
ONE OF ROB'S Rob funkier efforts, *Crazy Comets* is catchier than the theme in the game's arcade inspiration, *Mad Planets*. Rob also worked on the sequel, *Mega Apocalypse*, but preferred his original composition. yakmag recalls using the tune in a school talk: "It was about computer music. I loaded this up in class and belted it out to show what a professional coder could do!"

European C64 music scene that he'd been so heavily involved with and invested in.

Eventually, Rob decided it was time to leave, despite EA being on the rise. "The company changed as it became the giant of the 'games biz', especially when the Sony PlayStation was launched. The dev and production teams became huge – as did the money and stakes – and the small team creativity was lost," he says. "I didn't like a lot of the big corporate decision-making, the endless games sequels, and the new culture of hire-and-fire."

During his time in the US, Rob had also been quizzed by IBM about computer sound capabilities (IBM, naturally, ignored Rob's suggestion to use high-end Yamaha chips, instead preferring an alternative and much cheaper option) and was offered a job at Microsoft. But on looking at PCs and comparing their sound capabilities to the Amiga, he declined – a decision he now regrets, joking he could have "been as rich as Bill Gates" had he taken a different path. In more recent years, back in the UK, Rob says that he's mostly worked on a few small contracts and some live music work. He also remarked at Assembly that "between 1980 and 1995, I wrote a ton of music and got fried. Since then, I haven't sat down and created projects for myself, but that's not to say I won't do it again, because music becomes a part of you – it's in your blood."

A decade later, and he tells us he is still writing and composing a little, though not as much as he used to. "But not really videogame music," he adds. "But I would do something else if I was able to contribute." However, C64 music aficionados will recall Rob did briefly return to his roots with Chris Abbott's *Back In Time* project, remixing his C64 tunes using modern equipment. Other C64 musicians – notably Martin Galway – have said they always imagined something bigger when creating music for 8-bit systems, and so we ask if that was the same for Rob when working on chip tunes? "What on earth is a chip tune – sounds like something to add to a musical fish," he laughs. "But no – I just thought the games would be around for a few weeks and then put in the dustbin, to be then forgotten about. In fact I used to be really quiet about what I did because I got fed up of people saying 'I hate those awful bleeps and bloops from computer games'. I never for one moment thought they would be around some 25 years later, otherwise I might have done some things quite differently!"



» Rob Hubbard playing at *Back In Time, Live,* in Brighton during 2003.

THE MAKING OF



A powerful new 16-bit games console, continued pressure from a portly plumber, and a company firing on all cylinders led to one of Sega's finest hours in June 1991. Discover how a little blue hedgehog became the face of Sega.

IN THE KNOW

» **PUBLISHER:** SEGA
» **DEVELOPER:** SEGA/SONIC TEAM
» **RELEASED:** 1991
» **PLATFORM:** MEGADRIVE
» **GENRE:** PLATFORM

Before Sonic span onto the scene in a dazzling blur of cobalt blue, Sega's previous attempts to create a company mascot had been unsuccessful. Their primary intent was to capture hearts in the same way that Mario had done for Nintendo, but nothing seemed to fit. *Fantasy Zone*'s ovoid spaceship Opa-Opa is often referred to as the very first mascot, briefly holding on to the honour until a tracksuit-wearing, rock-smashing prince named Alex Kidd came along and took his paper crown.

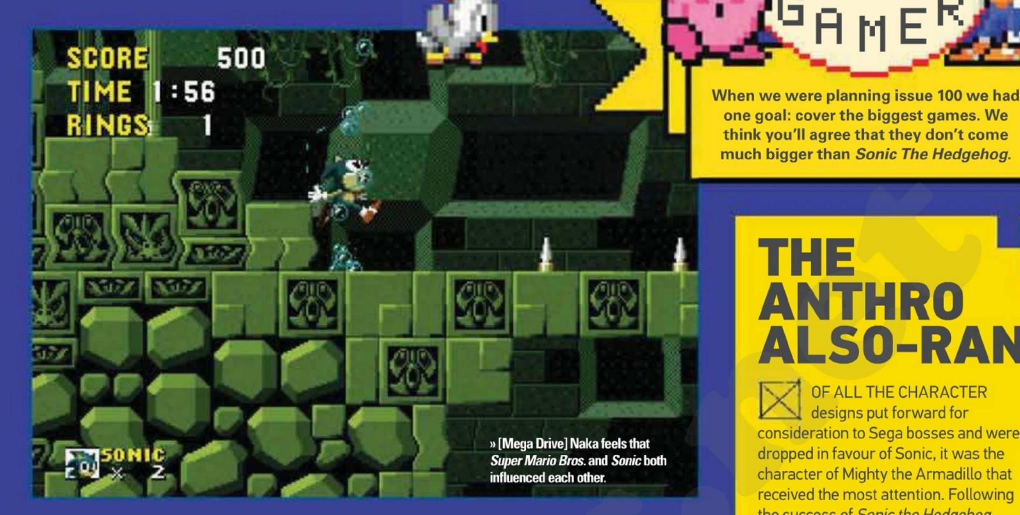
But when creating Alex, it's debatable that Sega had hit upon the key ingredients that would give them a character to match the might of Mario. Younger and more athletic than Nintendo's tubby talisman, trained in a martial art and able to drive an assortment of vehicles, Alex exhibited many of the same characteristics that Sega would imbue into Alex's spiny successor. For connecting with a young audience, Alex certainly had a lot going for him. Unfortunately, he had a tough time competing against Nintendo's all-conquering NES, which at one time could be found in 1 in 4 American households.

Two years after the 1989 release of the Genesis in North America, Sega found itself in a fairly strong position stateside. Its arcade machines *Space Harrier*, *OutRun* and *Shinobi* were proving popular coin-guzzlers, and its powerful new 16-bit successor to the Master System was also selling well thanks to its impressive visuals and early library of arcade tie-ins. But conscious that Nintendo was preparing to release its 16-bit successor to the NES any day now, Sega knew it needed to find itself a Mario, and fast.

So it was that Sega of Japan famously set its best designers the task of coming up with a brand new hero to represent the company and its new console. During the initial ideas stage many designs were pitched and considered; rabbits, armadillos, even human characters, but in the end it was a teal-coloured hedgehog that was finally selected, put forward by artist Naoto Oshima, who had previously worked as a designer on the first two *Phantasy Star* games.

Originally dubbed Mr Needlemouse, Oshima's creation went through a number of changes before becoming the zippy blue hedgehog we know today. Early concepts for the character, which were dropped as a result of a makeover by Sega of America, had him playing in a rock band, his mouth drawn with fangs, and in a relationship with a blonde human girl named Madonna.

For obvious reasons Sonic's colour was altered to Sega blue, while Oshima has revealed that Sonic's iconic red power sneakers were inspired by a combination of the belt-strapped boots Michael Jackson's wore on the cover of his album *Bad* and the colour of Santa Claus, whom Oshima regarded



» [Mega Drive] Naka feels that *Super Mario Bros.* and *Sonic* both influenced each other.

When we were planning issue 100 we had one goal: cover the biggest games. We think you'll agree that they don't come much bigger than *Sonic The Hedgehog*.



DEVELOPER HIGHLIGHTS

PHANTASY STAR (PICTURED)
SYSTEM: SMS
YEAR: 1988

SONIC THE HEDGEHOG 2
SYSTEM: MEGA DRIVE
YEAR: 1992

SPACE HARRIER
SYSTEM: ARCADE
YEAR: 1985

at the time as the most 'famous character in the world.' Blending all these visual elements together, Sega hoped it had the perfect character to appeal to an American market. All Oshima needed now was a striking game to show his creation off, and it was here that Sega bosses turned to a talented programmer named Yuji Naka.

Naka had become renowned in the company for his impressive programming skills thanks to his work on *Phantasy Star*. He had also proven his skill for tackling the platform genre, with an impressive Mega Drive conversion of *Ghouls'n Ghosts*. And so Sega asked Naka and Hirokazu Yasuhara, *Sonic*'s game planner/level designer, to help Oshima bring Sonic to life and become the driving force in a team of AM8 developers. They were later famously renamed Sonic Team.

When work on the project began, Naka was adamant the game should be fast and exhilarating to show off the impressive processing speed of the Mega Drive. An important cornerstone for the game, Yuji Naka explains how it was *Super Mario Bros.* that inspired him to create the fastest platformer the world had ever seen.

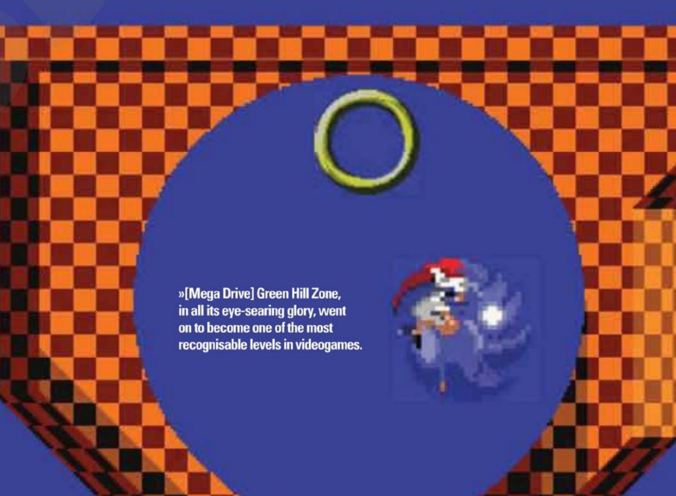
"Every time I played the first stage I wondered why I couldn't clear it faster, the better I got playing it." Naka explains. "This feeling must have been the beginning of the idea of *Sonic*, as you get good at playing you can run through the stage really fast. I think *Sonic* itself turned out to be a totally different concept to *Super Mario Bros.* But I do feel it was a game that affected me very positively. There is a part in *Sonic 1* where Sonic swims in the water and eats bubbles to take his breath to go on. I was very happy when *Super Mario Bros.* later used a similar system in one its sequels, because I felt we were inspiring each other."

Meanwhile, Yasahura's approach to *Sonic*'s level design was to create them in such a way that they would appeal to both casual and hardcore gamers. He set about achieving this by mixing fun level elements with challenging obstacles and moving parts. Of the seven zones in the game, Sonic's opening stage Green Hill Zone became the most iconic. A vibrant place featuring blue skies, lush green grass, chequerboard tunnels and loop the loops; the perfect playground for Sonic to showcase all his abilities. It was a brilliantly attention-grabbing introduction for gamers, and for those who had never owned a console. So where did inspiration for this iconic stage come from?

THE ANTHRO ALSO-RAN

OF ALL THE CHARACTER designs put forward for consideration to Sega bosses and were dropped in favour of Sonic, it was the character of Mighty the Armadillo that received the most attention. Following the success of *Sonic the Hedgehog*, Sega decided to revisit and polish up the character for an appearance in the Sonic coin-op *SegaSonic The Hedgehog*. In the isometric trackball-controlled coin-op, Mighty worked alongside Sonic and another anthropomorphic character named Ray the Flying Squirrel to escape from Robotnik's booby-trapped island base. Mighty would later appear in 32X title *Knuckles Chaotix*, while Ray just received minor cameos in the recent *Sonic Generations* and the Saturn port of *Gale Racer* (aka *Rad Mobile*), which was the coin-op that marked Sonic's first ever videogame appearance, as a rear-view mirror ornament. Ray was seemingly deserted by Sega, but considering that he's an orange, long-tailed flying squirrel, we suspect the reason could be because he played a big part in the design and character of Sonic's popular sidekick Tails. Either that or Sega simply deemed the characters to be too similar and so they promptly showed Ray the exit.





»[Mega Drive] Green Hill Zone, in all its eye-searing glory, went on to become one of the most recognisable levels in videogames.

THE OTHER SONIC 1



RELEASED SHORTLY AFTER the seminal Mega Drive hit, Sega created for its loyal 8-bit fans a unique version of *Sonic the Hedgehog* for the Master System. This 8-bit version differed in a number of ways from the original. It featured a new story and six zones; three based on the original but with altered layouts, and the others completely new. Many of the enemies made it across, as did all of Sonic's moves with the exception of his block-pushing animation. The game's development was handled by Ancient, a Japanese developer managed by revered Sega composer Yuzo Koshiro. Naturally then, Koshiro wrote the music for the game, which was a combination of tunes inspired by its 16-bit counterpart and brand new compositions. Overall, the 8-bit *Sonic the Hedgehog* is a fine standalone Sonic game, rather than a watered down port.



[Mega Drive] Green Hill Zone's bright vibrant look was inspired by the work of acclaimed Japanese illustrator Eizin Suzuki.



»[Mega Drive] The inventive bonus rounds quickly became a popular staple of the franchise.

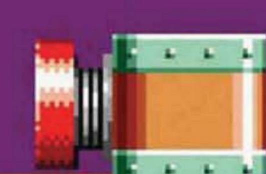
"Green Hill Zone was inspired by California," Naka answers simply. "Also we were aiming to show the latest computer graphics at that time, which were using polygon and ray tracing, through pixel art to make it look very new. With regards to the colours, I believe they were inspired by a picture drawn by Eizin Suzuki."

Eizin Suzuki's work frequently features stunning pop city illustrations that look every bit the kind of artwork we'd have expected to see up on the walls inside Sega at that time. Often depicting bright realism with a vivid surreal edge, one piece in particular instantly catches our attention. It shows a classic red open-top sports car parked beside a welcoming beach-side restaurant. With its deep blue skies and engagingly expressive colours, the connection is clear.

From a technical perspective, Naka says that the biggest challenge in getting the Mega Drive to accommodate *Sonic* came from the processing speed of its hardware. And with *Sonic* pushing the Mega Drive in a way that no game had done before, there were several features that Naka and his team wanted to incorporate into the game, but with space and time constraints were unable to. Interestingly, one of these omitted features would later provide the starting point for the sequel, while another inadvertently give rise to a popular Sega motif.

"There were two features that we were not able to put into *Sonic 1*," Naka explains. "The first one was to support two players playing at the same time. At the last point of developing *Sonic* we were doing tests with splitscreen in order to allow two players to play at the same time. But my technical capability wasn't enough to allow the game to be completed with this feature. When we began work on *Sonic 2* we tested this first to ensure that a two-player game system was achieved before properly starting the project.

"We also tried to prepare a sound select screen, with pictures of Sonic's band, and Sonic singing and break-dancing. The pictures were mostly completed but we couldn't make this feature fully completed on schedule, so it was rejected. But the storage on the ROM to put this feature in was available because of this, so we added the "Sega" voice on the part where we showed the Sega logo. In the end, I think this was a good idea."



From the initial concept for *Sonic* that saw him playing in a rock band to the revelation of a sound select screen that had to be dropped, it's clear that Naka and his team always intended for music to play an important part of the game. We were therefore keen to find out how much planning went into that particular aspect, and how the team ensured it would enhance the overall experience for players as successfully as it did.

"It was just around the time when music in games was first getting exciting, so we asked Masato Nakamura, a member of Dreams Come True [a famous pop band in Japan] to make the music for each stage sound like it was based on each stage's image. *Sonic* also put a lot of pressure on us not only in



ZONED OUT

The many levels of Sonic The Hedgehog



GREEN HILL

This gorgeous zone is relatively easy to navigate thanks to its large stretches that feature very few enemies or hazards. Loops are in abundance, and Sonic is able to reach insane speeds. This is arguably one of the most iconic videogame levels of all time.



LABYRINTH

The maze of Labyrinth Zone can be a real headache to navigate. In addition to having to make your way from some trickily designed stages, many of the levels are mostly underwater. Sonic can only hold his breath for a limited time, so you need to find an air bubble or drown.

STAR LIGHT

Speed freaks will adore Star Light, as Sonic can really zoom through it. Many of the levels are filled with loops and enable Sonic to reach hyper-fast speeds. It has a real rollercoaster feel to it, but care must be taken as while there are only a few enemies they are often impervious to Sonic's attacks.



MARBLE

As its name suggest, Marble Zone is made of Marble. It's also a very hazardous zone, thanks to a large number of nasty spikes, falling chunks of ground, and trickling lava that Sonic needs to navigate. There's a lot of block pushing on this level, and therefore less whizzing.

SPRING YARD

We like Spring Yard Zone, and not just because it appears like a giant pinball table. It can be a little frustrating to negotiate due to the many bumpers and springs it features, but careful movement is the key to success. It also features plenty of cool secrets to discover.



SCRAP BRAIN

This is a truly frustrating level with all sorts of devious and downright nasty traps for Sonic to deal with. Conveyer belts, vanishing platforms and intermittent gas ruptures (which send up gouts of flame) all combine to make this a hellish stage that will require all your skills to negotiate.

FINAL

This isn't really a zone. It's where Sonic must face off against Dr Robotnik for the final time. It's little more than a short corridor which ends in a large room filled with dangerous energy balls and plungers that try to crush poor Sonic. Kill Dr Robotnik for the win.



regards to the music but the sound FX and jingles. We fixed these quite a lot to allow them to make players feel good while they play the game."

Initially Sega of America had doubts about Sonic's American appeal, concerned that Americans wouldn't know what a hedgehog was. However, following a few tweaks by SOA to soften up the character for Western gamers, a change that at first didn't go down too well with the members of Sonic Team, *Sonic the Hedgehog* was finally finished and released in 1991.

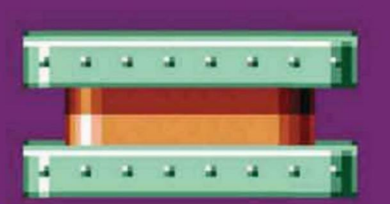
Looking more coin-op than console game, *Sonic the Hedgehog* helped to bridge the gap between those two markets more successfully than any Mega Drive title previously released, and became an instant classic as a result. And when Nintendo finally released the Super NES in North America later that year, it led to one of the biggest and most memorable console wars in gaming history.

Following an aggressive marketing campaign by SOA, Sonic quickly become synonymous with Sega. And when Sega of Japan gave into its initial reluctance to offer the game as a pack in with Genesis consoles, Sonic went on to play an even big role in helping Sega take majority share of the North American games market away from Nintendo.

Sonic's contribution to Sega's success certainly cannot be underplayed. But looking back on this most important of Sega success stories, which aspect of Sonic the Hedgehog is Naka most proud of?

"I think the fact the game is designed to be very fast but can also be controlled, and allow you to zip through the game nicely, is the part which I am most proud of. Thanks to Sonic Team members for putting great effort into this part. I am also proud of Sonic being played by so many people around the world. Thank you so much."









Baer's Odyssey

To mark the auspicious occasion of our hundredth issue, Paul Drury speaks to Ralph Baer, creator of the first ever game console, the Magnavox Odyssey

"It was a nice sunny day," recalls Ralph Baer, of 2 June 1976. "He was with his lawyer. We shook hands, exchanged a few pleasantries and that was it. A smile, a hello and a goodbye. That was the first time I met Nolan Bushnell."

It was a brief encounter outside the Chicago Federal District Court Building, yet a quietly momentous one in the history of videogames. Not only was Magnavox, the manufacturers of the first videogame console, about to sue Atari over PONG-related patent infringement, this was the first meeting of the two founding fathers of the games industry. Nolan, who with Atari had made arcade videogames a part of popular culture, and Ralph, whose pioneering work in the sixties led to the creation of the Odyssey games console in 1972, which turned our televisions into playfields. Here, we look back at Ralph's journey, and salute the father of home videogames.

1946 – First serve?

"My brother in law, Walter, swears I had a bouncing ball on my oscilloscope back in 1946," Ralph begins. "I have zero recollection of it but I bet you dollars to doughnuts that I wasn't the only one playing with their 'scope at that time, making spots bounce back and forth on the X-Y display. If he saw it or if he didn't, it really doesn't make any difference in the history of videogames."

So we'll sadly never know for certain whether a very primitive PONG ever played out on Ralph's tiny oscilloscope screen, twelve years before Willy Higginbotham's *Tennis for Two* briefly wowed visitors to Brookhaven National Labs in 1958. His brother's memory does, however, demonstrate Ralph's keen interest in electronics. Coming from a Jewish background, he and his family fled Germany in 1938, just two months before the Nazi's savage anti-Semitic Kristallnacht pogrom. They settled in New York, and Ralph spent three years serving in the US Army, both stateside and overseas. He put his electronics expertise to good effect; "When I was with military intelligence, one of the first things I did when we got to Europe was build a radio for the guy who I shared a bunk with. I managed to convert German mine detectors so we could pick up the American Forces Radio Station and listen to Glenn Miller."

After the war ended, Ralph took advantage of the G.I. Bill of Rights and went to college in Chicago. Graduating in 1949 with a Bachelor of Science in Television Engineering (the first degree available of this kind at the time), he would soon get the chance to make a TV set of his own.

1951 – 'That's kind of neat'

In 1951, Ralph was gainfully employed at Loral, an electronics company based in the Bronx, working on a high-class projection television set. "Part of the test equipment we used as we built the set was a pattern generator," he recalls. "You could put a pattern on-screen, like a checkerboard, so you could test the height, width, contrast, brightness, that kind of thing… I said, 'That's kind of neat, you can fiddle with these controls and things happen on the screen. Couldn't we build something like this into a television set and make it into some kind of game?' I took the idea to my supervisor and he said, 'You're already behind schedule, just get the damn TV set built!' And that was the end of that!"

The name of Ralph's supervisor? Sam Lackoff. We can't help wondering, if it weren't for his lack of vision could we have been playing

On the eve of his ninetieth birthday, Ralph Baer agreed to speak to us and discuss how he helped shape the industry. We wouldn't have consoles without him.

» The famous Brown Box and rifle, with the tangle of wires within that made the magic happen.

» Ralph with his Telesketch console in 1975.

games on our televisions in the fifties instead of the seventies? "No question about it," states Ralph, emphatically. "Technically, no problem whatsoever. If it would've resulted in a saleable product that did enough for whatever it would cost, well, that's a question I can't answer."

Just imagine if the industry had started twenty years earlier than it did. Where would we be now?

1966 – Do the Bus Stop

Fifteen years had passed since Ralph first toyed with the notion of playing games on a television. Since then, he'd moved to Sanders Associates and risen up the ranks to chief engineer, working mainly on military defence electronics projects, but his inner 'TV gamer' had never died. "I was waiting at a New York bus terminal for a colleague and it just came back to me," smiles Ralph. "The idea of playing games on a TV set had always been just under the surface. I remember sitting on a cement step outside the terminal, scribbling notes on a small pad. I got that feeling of being on to something…"

When he returned to his office in New Hampshire the following day, he wrote up his New York notes into a four-page document that laid out his ideas for playing games on a conventional television set. It's a fascinating piece of videogaming history because not only does it contain talk of oscillators, modulators, 'free-running raster techniques' and the numerous practicalities of actually getting images on screen, it talks about games. Action games, card games, sports games, even "Auto Racing using the screen as a roadway". Before a spot was even displayed, Ralph was planning what we might actually be playing in this brave new gaming world.

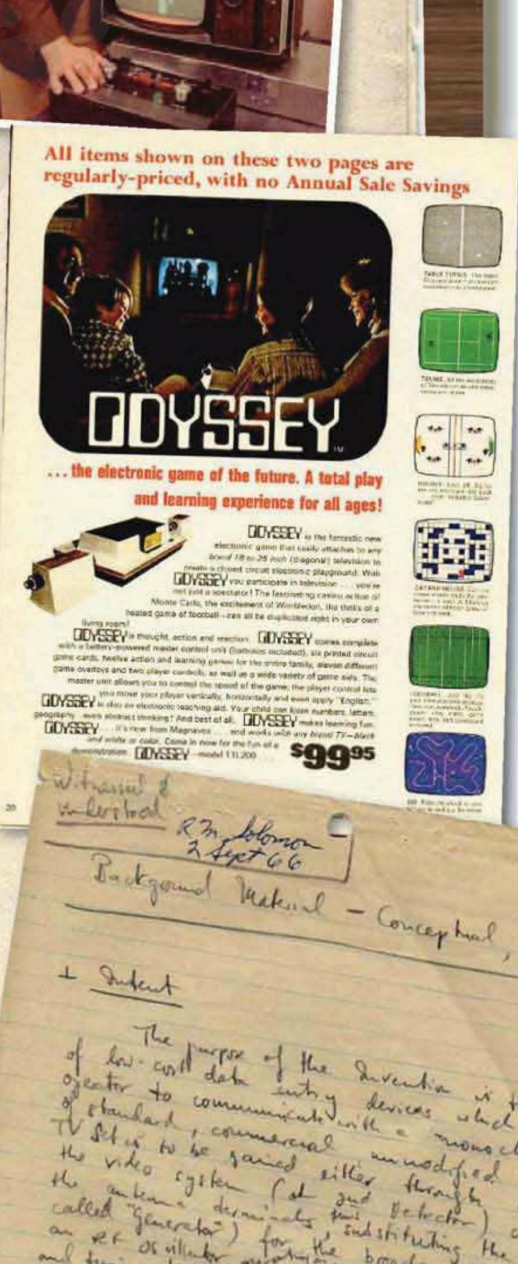
"What's wrong with looking ahead?" he laughs. "I was thinking of what I could do with this thing! I knew there were 40 million TV sets in the United States. If I could hook up some kind of box to a TV set that did something that people would want to pay for and I could sell that to just 1% of TV owners, that's 400,000 right there! I got a business! Then there's the rest of the world. That's gotta be another 40 or 50 million, right?"

Ralph was thinking big, which might explain why he clearly stated in the document that development should take place 'in a guarded and otherwise inaccessible room', with 'disclosure confined to a minimum of personnel.' He also had the presence of mind to get the seminal document signed and dated by a trusted colleague, Bob Solomon, to establish a legal record of his eureka moment, a highly prescient move given the slew of lawsuits that would follow over the following decades. Ralph, you must have instantly realised this was an important break-through. Something big, something worth protecting?

"There was no question in my mind," he confirms. "Of course, I could never have known how big it would really get…."

Realising the potential was one thing; making it become reality was to be an arduous, elongated struggle. It began by Ralph assigning a technician,

> **"I bet you dollars to doughnuts that I wasn't the only one playing with their 'scope at that time, making spots bounce back and forth on the X-Y display"**

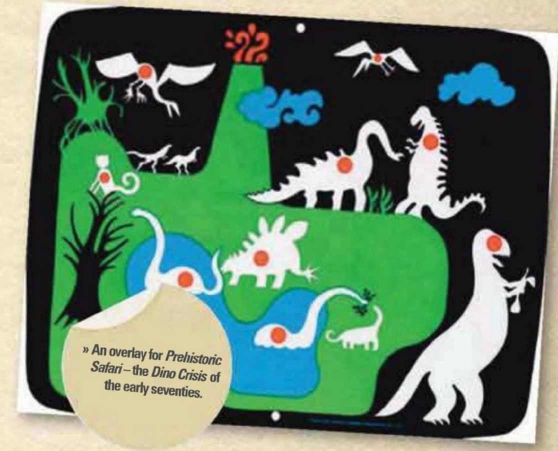




Bob Tremblay, to his secret project. Ensconced in the former company library on the fifth floor, out of sight from any curious eyes, Bob (under Ralph's direction) created a vacuum-tube circuit, which was christened TV Game Unit 1. So, did tense games of ping-pong between the two of you soon follow, Ralph?

Ralph laughs out loud at the thought. "No, no, it couldn't do a hell of a lot! It could put a spot on the screen and stretch it vertically, horizontally, move it around and change its colour. It wasn't meant to be a product but it proved we could get symbols on screen and that was the purpose of the exercise..."

That tiny tangle of wires and tubes was the 'proof of concept' that Ralph needed. He approached the company's corporate director of research and development, Herbert Campman, and gave a demonstration of the unit. This time, Ralph's superior had vision, and on 22 December 1966, he agreed to fund further development: $2000 for direct labour and $500 for materials. Now that he project had a little cash, and some credence from the company's management., it was game on.



» An overlay for *Prehistoric Safari* – the *Dino Crisis* of the early seventies.



1967 – A Tale of Two Bills

The new year brought two additions to Ralph's team. Two very different men that would in very different ways play vital roles in the creation of the first games console.

"Bill Harrison was my kind of guy," says Ralph. "He was a really good technician. He became an engineer later on, and he designed all the circuitry. He was on the bench, while I was out there running a division of five hundred people. I'd stick my head in a couple of times a day for fifteen minutes to see how things were going. He worked under my direction but he did the work and came up with stuff that we could manufacture and was inexpensive. For example, to generate a spot to move around a screen like for a ping-pong game, to do that in discrete logic typically takes four transistors. He did it in two.

"For the first time in human history, we had a videogame running with verbal instructions coming out of the TV set"

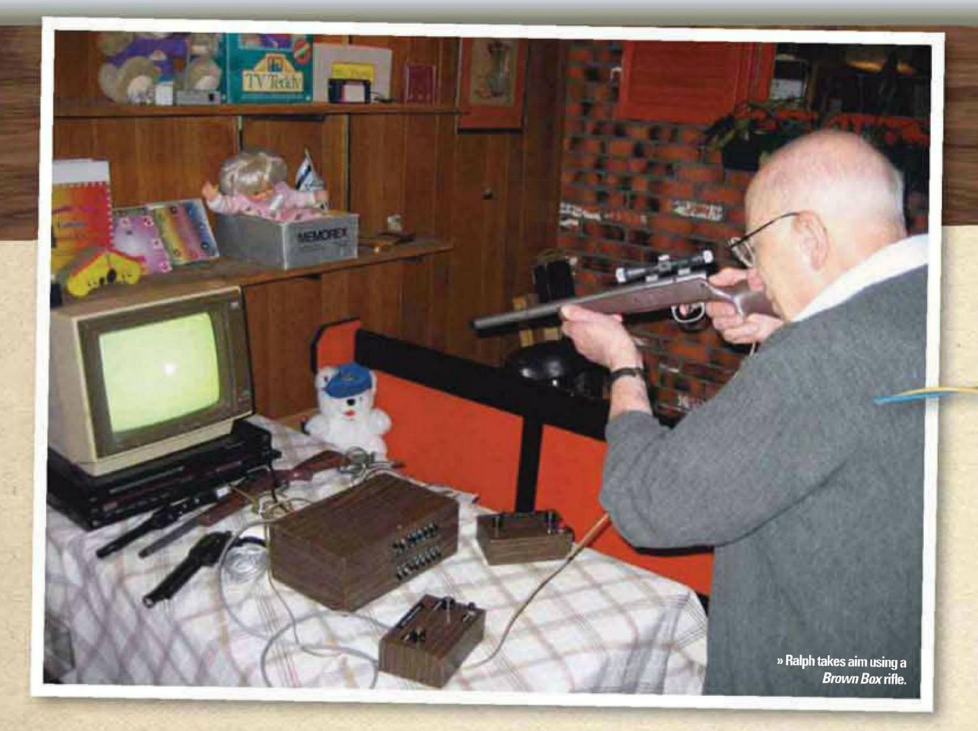
Once you need three spots, for two bats and a ball, that's a lot fewer transistors and resistors and that's saving you money."

So on 12 February 1967, Ralph took Bill to the same secretive room where Bob Tremblay had put together TV Game Unit 1, and he began working on what would become the second iteration of their console adventure.

Meanwhile, Ralph began sharing his game ideas with one of Herb Campman's engineers, Bill Rusch. "He was an MIT graduate," explains Ralph. "Very bright, very creative and very eccentric. He'd go out at lunch to play his guitar to people I thought were groupies. He was very independent and wouldn't take direction, but I tolerated it because he was very useful. A million times I would've cheerfully let him go if he wasn't such an important contributor to the effort."

That contribution can be clearly seen in a memo dated 10 May 1967. It detailed twenty-one different videogames, a culmination of conversations between Rusch and Ralph over the previous three months about what their TV game unit might be able to deliver. It reads like a manifesto for future game genres; there's a top down racing game where circuit-crashes or rear-ending the race leader are penalised; a baseball game where the speed of the pitch can be controlled and the batter must time their swing perfectly to make a hit; a maze game in which

» Ralph demonstrates the Odyssey 200 console, released in 1975.



» Ralph takes aim using a *Brown Box* rifle.

a white rat must traverse a labyrinth; various target-shooting games (see right); and an idea for an aerial World War One dogfighting duel, pre-empting Atari's ubiquitous *Combat* cartridge by a decade. There are even plans for an intriguing golf game that resulted in a bizarre peripheral.

"We built joysticks for Game Unit 2," explains Ralph, speaking about the practical aspects of implementing some of their game ideas. "What's more obvious to an engineer like me than to drill a hole in a golf ball and stick it on a joystick? Put it on the floor and hit it with your putter. Get it right and you get a hole in one!"

Mid-1967 – Summer of Games

Full of ideas and with an encouraging number of incremental technical breakthroughs, the group prepared to showcase their progress to the president of the company, Royden Sanders, and the board of directors. "I knew I couldn't blow this," says Ralph, "so I recorded the instructions for the games on Game Unit 2 on audio tape and I had Bill Harrison build a little 4.5 MHz oscillator and modulator so the sound came through the television set. I switched it on and, for the first time in human history, we had a videogame running with verbal instructions coming out of the TV set."

Seven games were demoed to the board that day. *Fox and Hounds*, a two player chase game, had a single red spot for a 'fox', pursued by three white 'hounds', while *Target Shooting* allowed one player to move the bullseye with the joystick, as a second tried to blast it with his rifle. Most intriguing was *Pumping Game*, in which the player took on the role of a fire-fighter frantically trying to extinguish the flames in a burning house, success being achieved by pumping a handle on the console. This primitive button-basher was accompanied by a charming hand-drawn overlay, featuring a determined fireman gripping his hose. The windows of the building were transparent, allowing the player to see the opposing levels of red (fire) and blue (water) colour on screen, which indicated success or failure.

So, did the board see the germ of a multi-billion dollar industry in those seven videogame vignettes? "They said I was nuts!" exclaims Ralph.

"We were a military electronics company building very complex, very expensive equipment, like anti-aircraft to ground missile protection. This was a long, long way from that. The reception was actually pretty cold. Out of the whole group, only two were smiling after the demo was done and they became supporters. The rest looked pretty dumb. But I guess they trusted me. I had been around a while..."

The truth was, Ralph and his team were also starting to have doubts. Their games were fun, but their lasting appeal was questionable. There was only so much entertainment you could squeeze out of two spots chasing each other across the screen, however cleverly you dressed it up. Then in November came a major breakthrough. Bill Rusch designed some novel spot generator circuitry on paper, Bill Harrison implemented it and now a third spot could be displayed on screen. This spot was different; it was machine controlled, and therefore, most excitingly, it could be a 'ball'.

"It was obvious we finally had something worth going after," enthuses Ralph, warming to the subject. "I mean, the other games, we were dragging them in by the hair just to have something to do but as soon as we had a ping-pong game, that was of a totally different order."

And so the first 'killer app' was born. All that had to be done was to turn the game into something they could sell to the world.

1969 – Boxing Clever

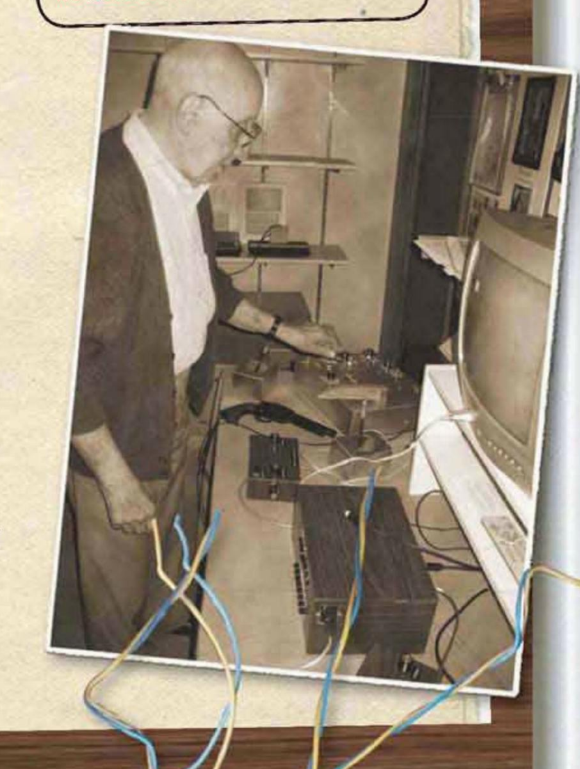
Videogame Unit 7 was given the name of the Brown Box, so called because the aluminium chassis containing the game circuitry was now covered with brown, self-adhesive wood-grain vinyl. This box of tricks could play various kinds of ping-pong, all developed by the team over the previous year. Volleyball, soccer and hockey all played around with the same basic 'two bats, one ball' formula, some utilising overlays to add goals and other little touches of 'realism' to proceedings. The light-gun and golf-putting games also made the final cut, along with a version of checkers. Herb Campman's response confirmed the team's hopes: "This looks like it's for real."

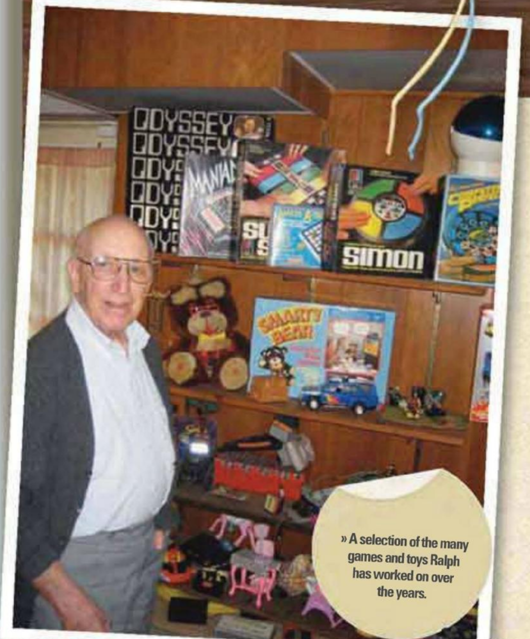
The Big Guns Come Out

"WHAT DO YOU do with a single spot on a screen?" muses Ralph. "It's pretty boring, right? So you shoot it! As soon as that idea came along, I sent Bill Harrison out to buy a plastic rifle. Opened it up, found room to put some electronics in – a sensor, some amplification, a little coincidence circuitry – so when you pull the trigger, and you're lined up with that source of light on the screen, the spot, you get a hit and you make that hit turn off the spot so it disappears."

Thus in 1967, a light-gun game was implemented for TV Game Unit 2, and another long-running videogame genre was established. We wonder whether the idea of adding a gun to the project might have come from the fact that Sanders was involved primarily in the defence industry or perhaps it was a reflection of America's well-established gun culture?

Ralph is quick to respond. "This comes up so often. You see these documentaries on the history of videogames and they make a big deal about this relationship with the military. I don't think it had a damn thing to do with it. A kid that goes to a carnival, does he have a go at skeet shooting because his dad was in the army? No, it's because it's freakin' fun!"





» A selection of the many games and toys Ralph has worked on over the years.

"No question it was ready to produce," says Ralph, "but we had to figure out who was going to put it into production! We had been trying to get cable companies interested but they just didn't have the guts. I can't believe it took us a whole year to realise all the parts we were using were the same parts used by TV and radio manufacturers. Those were who we needed to be talking to! And they came, one by one, and all of them said, Gee, this is great, but did any of 'em move off a dime? No. RCA was the only one who put together a contract and that took three months and it was so onerous to us that we walked away. But we got lucky. One of the RCA guys left to join Magnavox and told them they should take another look at us. We presented [the *Brown Box*] to them and their manager said, 'Go!' That's how it all started."

for $100,000! That was substantial money back then, like $300,000 in today's dollars. It was like someone had turned a switch on in me. In a micro-second I went from depression to elation!"

That three-foot photocopy of the first royalty cheque received by Sanders for sales of the Odyssey console was tangible proof of what Ralph and his tiny team had always believed: people would love videogames. That Christmas, 100,000 consoles were sold and the Magnavox Odyssey went on to sell 350,000 units over the next few years.

"In terms of selling a brand new product it was an unqualified success," beams Ralph. "It didn't matter that by the time it came out it was old technology. It worked and it was fun. And you know, it owed much of its success to the fact that Atari had brought out their copy of it, PONG, in the arcades. You wanna play that at home, you go buy a Magnavox Odyssey game. And that's what people did..."

"You can't compare the technology I had back in the sixties with what we have today. I look at my iPad and it's magic! Bloody magic!"

1972 – The Best Medicine

It's the summer of '72 and Ralph is lying in a hospital bed, recovering from a routine operation. The high of 1969 seems a long time ago. Since their TV game was given the green-light, things had been moving slowly. A year to sort out the legal contracts and another for the *Brown Box* prototype to be manufactured into the Magnavox Odyssey, which finally hit the shelves in the summer of 1972. Worse still, Sanders was hit badly by a severe slump in the defence industry, resulting in large-scale job losses at the company. In his own words, Ralph was in a 'deep funk'.

"You can read all the books on psychology you want, the reason people get depressed is that they lose confidence in themselves," he reasons. "My division in the company had shrunk by a few hundred people, employees were hiding behind storage cabinets to avoid getting on the lay-offs list and I was in hospital for this operation. Then in walks Herb Campman with a giant cheque

Success inevitably breeds imitation. Atari had built their arcade business from the huge profits generated by *PONG*, which did indeed bear an uncanny resemblance to the Odyssey's ping-pong game. Countless other Johnny-come-latelys also jumped on the bandwagon and produced home and arcade versions of the game. In 1975, Atari decided to produce a home version of their arcade hit and so we return to those courthouse steps in Chicago, where Ralph first met Nolan.

1976 – Who's the Daddy?

"I felt confident from the start," says Ralph. "Nolan had played our game at a Magnavox dealership in Burlingame, California, in May '72. No-one can tell me that wasn't the inspiration for him to tell Al Alcorn to build *PONG*. That's fine. I've been in the toy and game business long enough to know everyone bases their ideas on

Simon Says

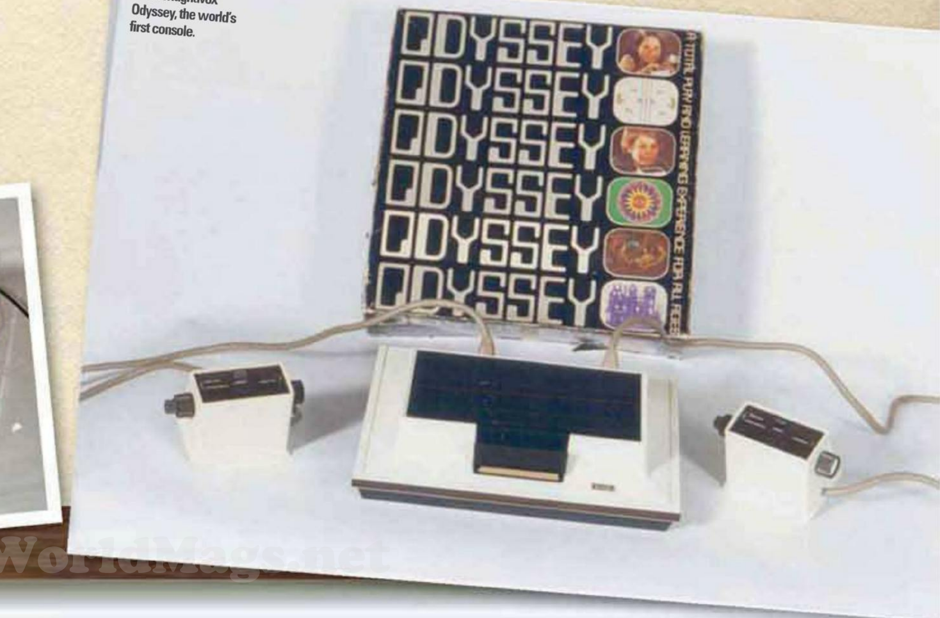
OF RALPH'S NUMEROUS post-Odyssey creations, the most commercially successful was the iconic handheld *Simon*. The simple 'follow the notes' gameplay, and stylish, circular design led to sales of several million units and versions of the handheld still remain in production today, more than thirty years after its launch in 1978.

"It was just serendipity that *Close Encounters of the Third Kind* was out," recalls Ralph. "The mothership was round and made sounds like *Simon*. When I saw the movie I said, Hey it's *Simon* coming in! I'm sure, subliminally, it helped sales."

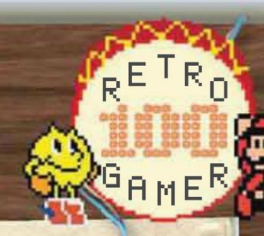
Simon has a special place in Ralph's heart, and it's not just due to its lasting popularity. The idea for the game originated after he had played an old Atari arcade game called *Touch Me* at a trade show, a game that was supposedly born from a concept by Nolan Bushnell himself.

"We managed to make a real success of Simon and so, unintentionally, I managed to upstage Nolan for once," chuckles Ralph.

You can read the full Simon story in RG 73, available to buy online.



» The Magnavox Odyssey, the world's first console.



Still Creating After All These Years...

FROM COMPUTER PERFECTION to Coleco's Telstar and Kid-Vid series, Ralph has been involved in literally hundreds of innovative projects, ranging from interactive toys for children to talking greetings cards. And despite being in his 90th year, he has no intention of stopping.

"As we're speaking, my marketing guy is on his way to California to present two products we've just finished to a company in the Bay area," explains Ralph proudly. "I've got better at doing at my own software and I've done dozens of games over the last few years. One of the projects is a talking book, where a kid can store their own voice and play around with it, and the other is a tricycle with electronics added in that turn it into a games machine!"

Mobile gaming the Baer way. Power to his soldering iron and endless imagination.

other people's. Nothing comes from a vacuum. But we had issued patents that had clearly been infringed by Atari and others."

The judge agreed and Magnavox – and by extension, Ralph – won on all counts. Well, all but one, perhaps. For many years, as the videogame industry boomed, and occasionally busted, into the billion-dollar business it is today, it was Nolan who was referred to as the father of videogames. Ralph's role was largely ignored and his huge contribution to the birth of our favourite hobby went unacknowledged for several years. Thankfully, the wonderful web helped put the story straight.

"I was a no-show before the internet," sighs Ralph. "Then I got a website and that put me on the map. Since then, I've received the National Medal of Technology from President Bush, the original *Brown Box* is in the Smithsonian Museum and I've been awarded so many prizes and medals, I don't know what to do with them all. They're cluttering up my desk here! The amount of emails I get from students with yards of questions to help them with a paper they're writing on the history of videogames, maybe that's an indication that I've finally arrived!"

Before we leave Ralph to get back to work at his bench in his basement lab (even as he approaches his ninetieth birthday on 8 March, he's still inventing new products [see above]), we explain that this article is for our hundredth issue, and wonder whether he ever looks at what videogames have become, both commercially and culturally, and think, did I really start this? He thinks a while before answering.

"Well, obviously, yes, but I'm very conscious that though I might have started it, there are thousands of creative people that made it all happen. And you can't compare the technology I had back in the sixties with what we have today. I look at my iPad and it's magic! Bloody magic! And everything's getting more magical!"

So gamers, raise your joysticks to the wizard that cast the first spell. To Ralph Baer, the true Father of Videogames.



A special thank you to Ralph for providing the images for this article. You can order his fascinating book Videogames: In The Beginning from www.rolentapress.com and find out more about his incredible career at www.ralphbaer.com Additional images courtesy of David Winter of www.pong-story.com

» Ralph with one of the latest versions of his ever-popular handheld, *Simon*.





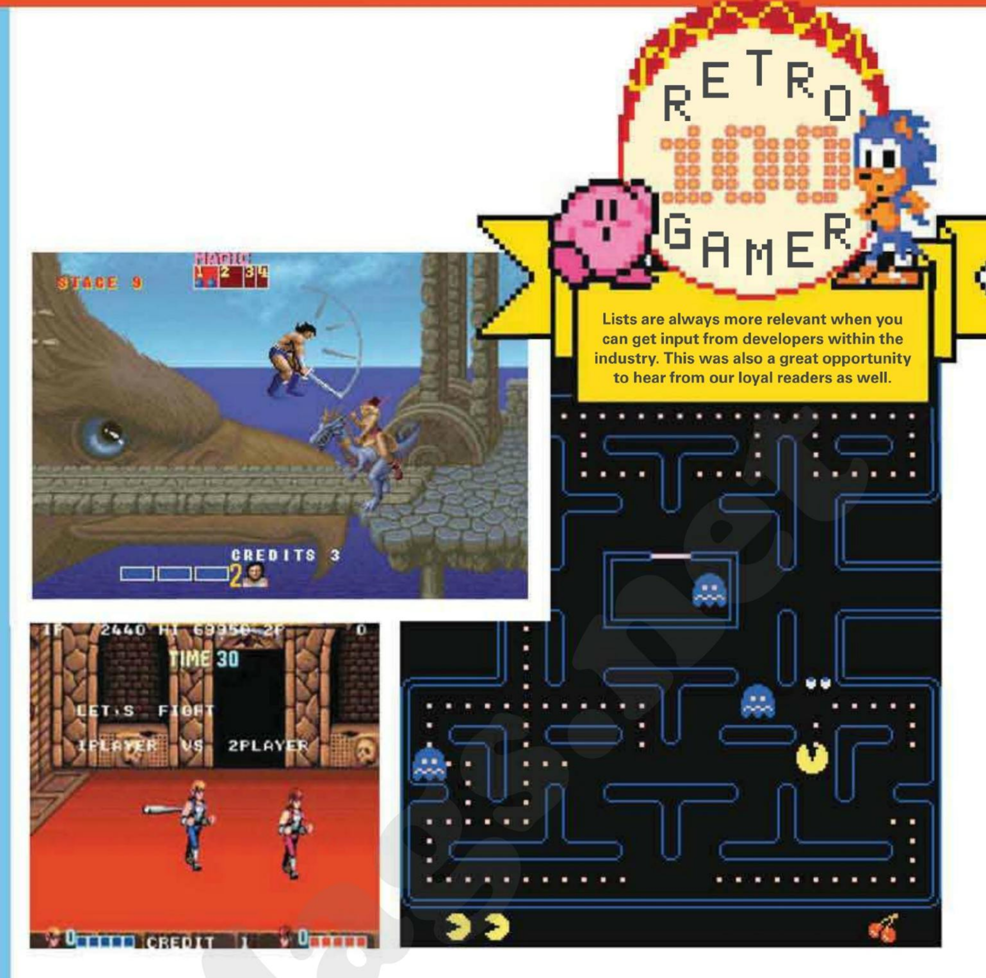
» This overlay for the early *Pumping Game* was hand drawn by Stew Gregory, a draftsman at Sanders.


100
CLASSIC GAMING MOMENTS



Videogames are filled with classic moments that mean a great deal to all who experience them. Some are revolutionary and can change a genre, while others are simply cool, but the best ones manage to leave a lasting impression on you. With that in mind, we're presenting 100 of our own classic moments that have made us smile, chuckle, recoil and cheer over the years, and have asked games industry veterans to include some of their most memorable moments as well. Enjoy.





Lists are always more relevant when you can get input from developers within the industry. This was also a great opportunity to hear from our loyal readers as well.

DOOM
★ WIELDING THE BFG 9000

Getting hold of the BFG (Big F***ing, or Fragging, Gun) 9000 is a joyous moment. In a world as hellish as *Doom*, it's like a gift from heaven. That's why we dub it Bullets From God 9000.

DOUBLE DRAGON
★ FIGHTING YOUR MATE

After defeating Willy, players are forced to fight for Marian's affections. Never put a girl before friendship… unless you're playing *Double Dragon*.

DUKE NUKEM 3D
★ VISITING A STRIP BAR

The world of *Duke Nukem 3D* was littered with interactive hot spots and places to explore. The most iconic was a seedy strip bar where Duke could pay exotic dancers to shake what 3D Realms gave them.

METAL GEAR SOLID
★ PSYCHO MANTIS FIGHT

This freakish boss could read your memory card and every action, requiring players to think outside the box to defeat him.

DONKEY KONG
★ THE KISS

You've dodged barrels, cement pans and sentient fireballs, climbed countless rungs, and removed eight rivets to finally give Donkey Kong possible brain damage. All that's left is for Mario to collect his reward.

PAC-MAN
★ TURNING THE TABLES

Outnumbered four to one by deadly spectral foes, each round offered four opportunities to grab a Power Pellet and see Pac-Man become the tormentor.

STARFOX 64
★ KATINA

Though *Independence Day* has aged terribly, to play a re-creation of the movie's climax in *Star Fox 64* was pretty exciting stuff. The Katina stage sees Fox and pals rallying to protect a base from a phalanx of enemy fighters and a massive mothership.

STAR WARS
★ BLOWING UP THE DEATH STAR

Wish fulfilment is something games do brilliantly. Letting you live out the movie's climactic Death Star assault, Atari's *Star Wars* coin-op proves this better than any other game.

SUPER MARIO BROS
★ WORLD 1-2 WARP ZONE

Usually, all breaking through a playing field gets you is entry to a fragile glitch universe of grey nothingness. In *Super Mario Bros* it rewarded you with a memorable ticket to the later stages in the game.

GOLDEN AXE
★ YOU'RE FIGHTING ON GIANT ANIMALS

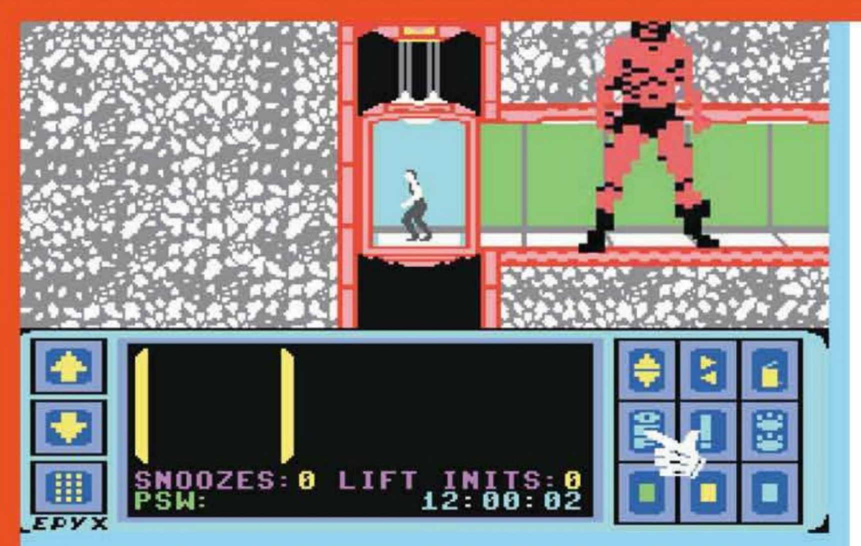
"I'm hacking away at people on the back of a giant turtle and the top of a majestic eagle." Sure beats neon streets and disorganised warehouses.

PONG
★ TWO'S COMPANY

Beating a human opponent for the very first time and realising that gaming was more fun with a friend.

OUTRUN
★ DECISIONS, DECISIONS

You're racing along in your open-top Ferrari Testarossa at breakneck speeds, your girl at your side. Suddenly the road begins to split





in two and you realise that, for the first time in a racing game, you have a choice, and it's a feeling of freedom that remains unmatched.

ZELDA: A LINK TO THE PAST

★ ANOTHER WORLD

Visiting the Dark World for the first time and realising that Link's adventure is far from over.

CASTLEVANIA: SYMPHONY OF THE NIGHT

★ INVERTED CASTLE

Successfully saving Richter and discovering that Dracula's castle has inverted, giving you a brand new citadel to negotiate.

CONTRA III: THE ALIEN WARS

★ CUE TERMINATOR BOSS

The room turns ominously quiet. Slowly, a skeletal claw breaks through the loading doors, and then another. The doors are pulled back to reveal a gigantic, red-eyed, robotic skeletal head. Eek!

WIPEOUT

★ SHAKE IT, BABY

Taking out every opponent ahead of you with a well-timed blast of the Disruptor.

THE SECRET OF MONKEY ISLAND

★ INSULT SWORD FIGHT

Participating in your first hilarious insult fight, requiring wits as sharp as your sword. "You fight like a dairy farmer." "How appropriate. You fight like a cow."

IMPOSSIBLE MISSION

★ THAT SPEECH

The first time you heard your Commodore 64 say, "Another visitor! Stay a while. Staaaaaay FOREVER!" Still sends shivers down our spines.

FINAL FANTASY VII

★ AERIS'S DEATH

Main characters you love don't die in videogames. They do in *Final Fantasy VII*, though, and Aeris's death at the hands of Sephiroth remains one of the most heartbreaking videogame moments of all time.

3D MONSTER MAZE

★ HE'S BEHIND YOU!

You're trapped in a maze with a dangerous T-rex and see the following words appear on screen: "Run! He's behind you!" Still scares the life out of us.

MEGA MAN

★ LEVELLING UP IN STYLE

Hang on, so when I defeat a Robot Master, I own his soul? Cool!

BARBARIAN: THE ULTIMATE WARRIOR

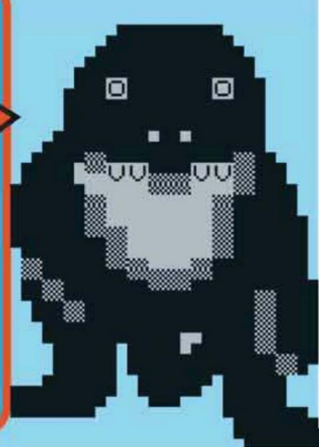
★ HEADS WILL ROLL

Successfully executing the decapitation move and seeing

DEVELOPER HIGHLIGHTS

WIL OVERTON

"Sitting in front of a C64 and a portable TV with my mate, Robin, sometime in 1984, as we both tried to beat Lee Braine's crushingly unforgiving *Where's My Bones?* for the umpteenth time. We never did finish it but we still talk about it now. A simple game and a happy time. No HD or internet connection required."



DEVELOPER HIGHLIGHTS

COLIN JONES

"Joy isn't an emotion I often associate with videogames, but that's what I remember while playing *Eco*, an evolution simulator from Denton Designs. Running around a green world as a wireframe dog was a fine moment of Atari ST-induced freedom. Eating, mating – am I remembering this right? – and generally having a good time led to more control of your genetic code and the ability to upgrade species. I stopped when my creature attained human status – I knew I'd peaked by then. But thanks to Denton Designs for a moment of joy, and a perfect little alternate universe."







your opponent's disembodied head get disrespectfully punted by a goblin.

NHL HOCKEY
★ FIGHT!!!!

Multiplayer was fun, but it's the satisfyingly bloody brawls in EA's *NHL Hockey* series that videogame hockey fans remember the most.

SONIC THE HEDGEHOG
★ GREEN HILL ZOOM

Racing through *Sonic*'s first stage and experiencing the blinding speed, bright colours, punchy music and the loop-the-loop, and feeling that home videogames would never quite be the same again.

TOMB RAIDER
★ T-REX ENCOUNTER

Lara enters the Lost Valley and discovers a ferocious killer from the past wandering its tropical surroundings. The ominous sense that you could cross paths with the beast at any moment made this one of the best moments in the series. It's *3D Monster Maze* all over again.

FINAL FIGHT
★ BEAT A BEEMER

Few bonus rounds are as iconic as *Final Fight*'s car-whacking stage. It certainly made a refreshing change from fighting countless rockabilly street punks called Relay and Hand.

STREETS OF RAGE
★ JOIN OR FIGHT?

In the spirit of *Double Dragon*, upon reaching the final boss, Mr X, he asks players if they would like to join his criminal organisation rather than overthrow it.

RESIDENT EVIL
★ THE FIRST ZOMBIE

After disturbing him from gorging on the entrails of poor Kenneth J Sullivan, the player gets a warts-and-all close-up of *Resident Evil*'s first ever zombie.

GHOSTS 'N GOBLINS
★ ARTHUR'S DIGNITY

Arthur loses his armour and is forced to continue his mission in just his boxer shorts, emphasising the feeling of vulnerability. Thankfully, Capcom didn't do a similar thing in *Commando*.

THE REVENGE OF SHINOBI
★ JOE VERSUS BATMAN AND SPIDER-MAN

The sequel to *Shinobi* saw Joe fight not one but two comic book heavyweights in an unsanctioned battle set up by Sega and… well, just Sega.

DRAGON'S LAIR
★ THOSE GRAPHICS

Oh my god! It's like playing an interactive cartoon!

STRIDER
★ DOWNHILL RUN

Strider's downhill run remains one of the most exhilarating moments in any videogame. Beautifully paced to the soundtrack, Strider runs down a mountainside, explosions biting at his heels, before effortlessly cartwheeling over a large chasm. Breathless.

REZ
★ BEST FINAL STAGE

Rez's final stage is one of the best of any videogame. Period. Epic in scale, and beautifully synced to Adam Freeland's fantastic *Fear*, it's a magnificent experience that needs to be fully appreciated with the lights off and the sound way up. Trance Vibrator is optional.

R-TYPE
★ LOOK AT THE SIZE OF THAT THING!

While meeting Dobkeratops sticks in the memory of many, *R-Type*'s third stage really left an impression. The entire level is one epic battle against an enormous mothership. Many have emulated it since, but Irem nailed it.

PRINCE OF PERSIA
★ SELF-DESTRUCTION

Faced with your doppelganger, you're thwarted by an opponent who can read your every move. Jordan Mechner's genius was allowing you to sheath your blade, then jump into and destroy your dark twin.

MANIC MINER
★ GETTING THE BOOT

The *Monty Python*-styled boot that crushes poor Willy when he runs out of lives. Surreal British humour at its best.

BACK TO SKOOL
★ THE WRITING'S ON THE WALL

The first time you wrote a word – most likely a swear word – onto one of the blackboards.

HEAD OVER HEELS
★ FRIENDS REUNITED

Fighting through all manner of devilishly tricky screens and finally uniting Head and Heels, only to realise that you'll have to continually split them up at specific points to properly finish the game.

DEVELOPER HIGHLIGHTS

STEVE CROW

"One of my favourite games back in the Eighties was *Uridium* by Andrew Braybrook. It had such a good feel and was silky smooth on the C64. It was also incredibly hard but certainly fun to play. At the time it was an original twist on the *Defender/Scramble* type of game that elevated it to a whole other level."





DEVELOPER HIGHLIGHTS

STEWART GILRAY

"I remember the very first time loading up *Knight Lore* on the ZX Spectrum and thinking, 'What is this strange magic?' Then switching it off as I couldn't get my head around the concept of isometric 3D graphics. It took six months before I decided to try it again."



PARADROID
★ YOU NEVER FORGET YOUR FIRST TIME
Being an Influence Device is no fun in Andrew Braybrook's *Paradroid*. That is until you complete your first mini-game and can successfully take over and destroy a far larger foe with better armour and weapons. Suddenly the ship isn't such a scary place any more.

WAVE RACE 64
★ AMAZING WAVING
Lots of games feature impressive physics, but rarely have they been as convincing as Nintendo's *Wave Race 64*. Not only are you battling the other racers, but you're also fighting the very elements.

LEMMINGS
★ NUKING LEMMINGS
There are few videogame moments as satisfying as meeting your Lemmings rescue quota and then giving yourself a pat on the back by blowing up the unneeded stragglers. Quicker than marching them off a cliff.

WANTED: MONTY MOLE
★ ARTHUR SCARGILL BOSS
One screen away from escaping with his coal, ready for the approaching winter, all that stands between Monty and the threat of hypothermia is NUM leader Arthur Scargill. Who says games aren't political?

SONIC THE HEDGEHOG 2
★ SUPER SONIC
Collecting all the Chaos Emeralds in *Sonic The Hedgehog* rewarded you with a slightly better ending. Grabbing them all in *Sonic 2*, though – and then 50 rings – transformed Sonic into a hyper-fast, semi-invincible blond rocket.

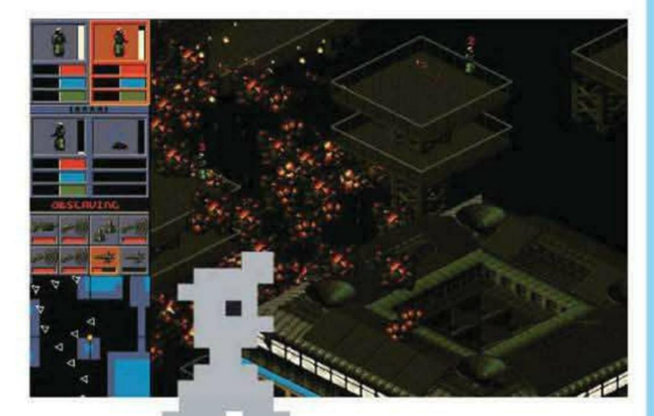
TETRIS
★ MAKING BEST USE OF A 1X4 BLOCK
Slotting said block down a well-organised wall and causing four horizontal lines of bricks to vanish for maximum points.

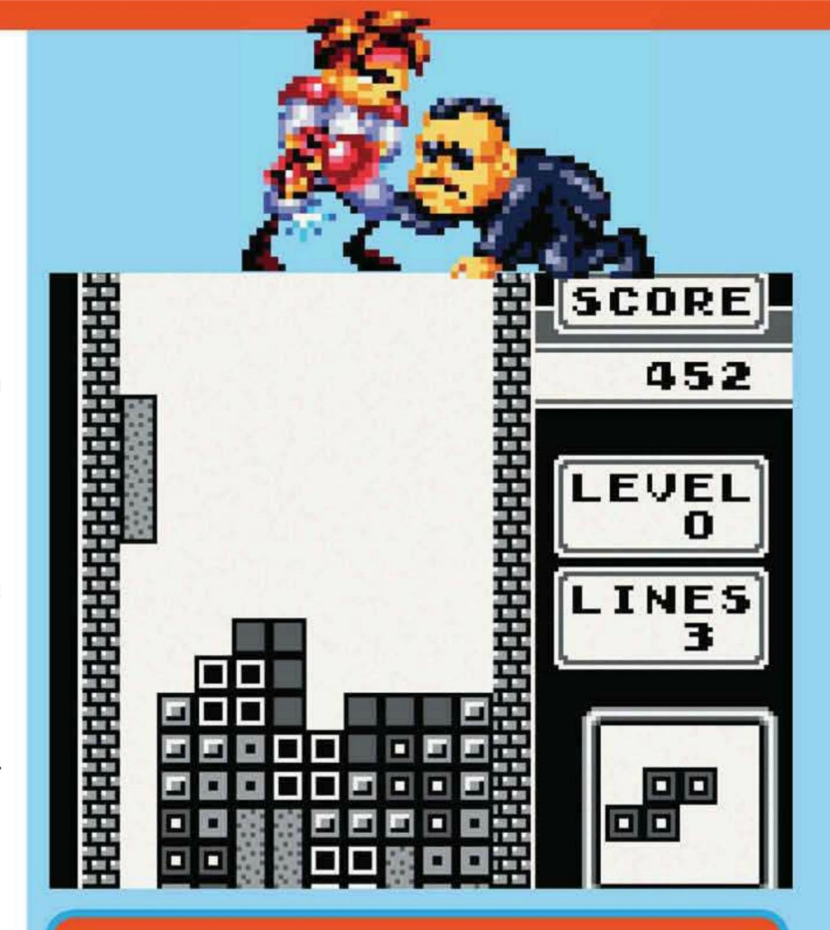
SYNDICATE
★ USING THE GAUSS GUN
Okay, it looks a bit like a sex toy, but this pocket-sized rocket launcher was capable of doing some serious damage in the bleak future world of *Syndicate*.

SUPER MARIO BROS 3
★ FLYING PLUMBER
Super Mario Bros 3 introduced a host of new powers for Mario. The coolest of which was the Super Leaf, which dressed him in a fetching raccoon suit and gave him the ability to momentarily fly.

HALF-LIFE
★ GRAND OPENING
The opening of *Half-Life* was a masterclass in scene-setting. Arriving late for his first day at work, Gordon Freeman is given a tram tour of his new workplace, cleverly foreshadowing places he'll be fighting through later on in the game, and gets a front-row seat to see the world-changing events unfurl. It's a seamless and attention-grabbing intro that many games since have tried to mimic.

GUNSTAR HEROES
★ THE DICE ROOM
Gunstar Heroes is loaded with inventive, action-packed levels, but the Dice Room is the standout, taking on the design of a board game where the bad spaces on the board whisk our heroes to deadly chambers and barmy boss battles.





DEVELOPER HIGHLIGHTS

BRENDAN GUNN
"My most memorable gaming moment was playing *Gunship* on the Commodore 64. One night I was hunting down a Russian chopper that kept disappearing behind hills. I saw it duck behind one hill in particular, and I decided to sneak round the other side. As I approached, the chopper popped up over the crest and pumped a couple of missiles at me from close range. There was nothing I could do. I released some chaff out of desperation, but I knew it was too late. The missiles hit, and I suffered a total power cut, leaving me in both darkness and shock. I almost thought I was dead for real."

READER MOMENTS

Readers share some of their all-time favourite gaming moments

Halo: Combat Evolved. The massive end battle between The Flood and the Covenant. What shocked me was that I was effectively the last human on the planet and had been forgotten about, as The Covenant now just cared about fleeing from the parasite. It dawned on me that I was competely and utterly alone, and, for the first time in a videogame, I was no longer the focal point of the world I inhabited.
Simon O Flaherty

Playing *GoldenEye 077* in multiplayer was absolutely fantastic fun. The clothes gradually get soaked with blood and turn red, the walls and scenery get shot to pieces and stay that way for a short while. Brilliant detail.
Davecaster

Getting my Atari VCS with *Space Invaders* when I was 9. The idea of having *Space Invaders* in your own home was unimaginable!
Ned Langman

Ice Cream! Ice Cream! surely the most iconic SFX sample of the 90s.
Tim Fitches

I used to enjoy taking Lara Croft to the highest point of a level, then swan diving down to a satisfying bone-crunching demise.
Rapidly-greying







DEVELOPER HIGHLIGHTS

SIMON BUTLER

"One of my favourite moments was loading up *Knight Lore* for the very first time. I know this probably seems like a safe and clichéd choice, but I had waited so long to play it and read all the previews and snippets in the magazines of the time. I remember I ran out on my lunch break from Denton Designs on the day of its release, bought a copy, and hot-footed it back. As usual, those damn things never loaded as fast as one would have liked, but when it did I was just gobsmacked. Sure, I'd seen isometric in *Zombie Zombie* and *3D Ant Attack* (two faves), but this just had something special."



DEVELOPER HIGHLIGHTS

GARY BRACEY

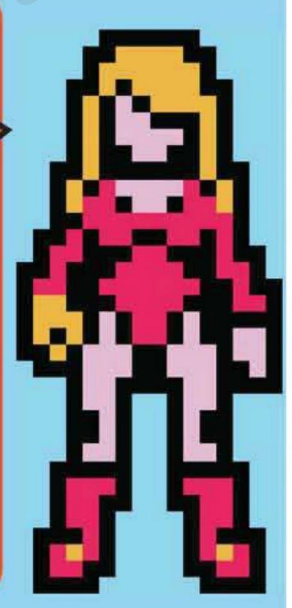
"*Donkey Kong* was the arcade game to first hook me and get me interested in videogames.

My love for *Manic Miner* made me decide to forge a career in videogames.

Achieving 1 million unit sales of our *RoboCop* game confirmed I'd chosen the right career path

Seeing Digimask [face-mapping technology] used in *Rainbow Six Vegas*.

More recently, playing nuggets like *Ico*, *BioShock*, *Portal* and *Arkham Asylum* reassures me that there remains a plethora of creative, talented people out there and fresh gameplay concepts are still achievable."



KNIGHT LORE

★ TRANSFORMING INTO A WEREWOLF

Knight Lore's 3D 'Filmation' graphics were mind-blowing alone, but your character also suffered from lycanthropy. It was put to great use in the puzzles and was also an effective motivator to complete your mission.

ROBOCOP

★ SHOOT BETWEEN THE LEGS!

It let you shoot a violent pervert straight in the gonads.

METROID

★ FIRST FEMALE LEAD!

The end of *Metroid*, where you discover that the macho bounty hunter who's been running around slaying Space Pirates and being badass is a woman.

ANT ATTACK

★ ANT HARM

Wandering the mesmerising isometric world of Antescher was a marvel in itself back in 1983. There was a sense of urgency to your mission, though, as a young girl or boy was waiting to be rescued from the many giant ants that surrounded them. Getting your charge to safety remains one of the most satisfying moments of any videogame.

HALO

★ THE SILENT CARTOGRAPHER

One minute you're swooping over a battlefield watching the fight below you, and the next you're seamlessly thrust into it, desperately trying to stay alive.

STEEL BATTALION

★ EJECT, EJECT!

While starting up your mech in *Steel Battalion* is a memorable moment in itself, it's the sheer panic from reaching for and trying to activate the eject button that really lingers in the memory. Fail to hit it in time and your save is wiped, dumping you back to the start.

ETERNAL DARKNESS

★ I'M SEEING THINGS

This game was an office favourite, with the inability to move, an irritating fly you couldn't swat at and your TV switching itself off all rating highly as everyone's favourite insanity effects. The best by far, though, is the prompt you get to erase your memory card. You, of course, say no – only to see the card delete anyway, erasing all your hard work. Looking on with panic-stricken eyes, the game flicks back with all your data intact, revealing yet another evil but very clever insanity effect.

STREET FIGHTER III

★ THE DELIBERATE PARRY

Anyone can parry by accident, but the sense of satisfaction you receive when you purposely pull one off is one of the best feelings around.

RESIDENT EVIL 4

★ FIGHTING KRAUSER

You could fill a magazine with *Resident Evil 4*'s best moments, but the superb QTE fight with







DEVELOPER HIGHLIGHTS

RICHARD SPITALNY

"Showing *Boulder Dash* on the Atari 400/800 before it was finished to Arnie Katz and Bill Kunkel – two of the three founders of *Electronic Games* magazine – and seeing their excitement, confirming our instincts that the game would be a hit. Of course not knowing then what a BIG hit it would become."

DEVELOPER HIGHLIGHTS

TRIP HAWKINS

"My favorite moments have always involved social play when casual players have been able to beat me in one of the games that I designed. They are so thrilled when this happens! I designed a casual social game for the 3DO called *Twisted* and was playing it with family members including my kids and their grandfather. You need to advance 100 steps up this staircase and I was on step 99, guaranteed to win on my next turn. But one of the plot twists is a move in which the leader must trade positions with the last-place player. The kids and the grandfather were astounded when he suddenly jumped from dead last to first and won the game, beating me when they all thought I had an insurmountable lead. They were all jumping around the room, waving their arms and laughing and shouting, and grandpa was beaming with delight. Aren't games wonderful?"





Krauser is easily its most unforgettable moment.

IK+
★ TROUSER PRESS

Pressing 'T' in Archer Maclean's superb karate sequel. Still makes us laugh now.

SHADOW OF THE COLOSSUS
★ THE GUILT!

Realising that the gigantic beasts you've destroyed weren't a threat to anybody, but you went ahead and killed them anyway. Never before has a game extracted such guilty emotions from us.

GOLDENEYE 007
★ ONE-HIT KILL

Making a mad dash for the Golden Gun and using it to get one-hit kills in Rare's superb multiplayer game.

GHOSTBUSTERS
★ BUSTIN' MAKES YOU FEEL GOOD!

You've positioned two Ghostbusters at opposite ends of the screen and have Slimer trapped inside their proton beams. You then slam the fire button to release the trap and send a grabbing arm up into the air to snatch him. Bonus points for jumping up from your seat, shouting, 'We got one!'

MORTAL KOMBAT
★ FINISH HIM!

From separating your opponent's head and spine from their body, to pulling out their still-beating heart, *Mortal Kombat*'s satisfying ways to humiliate your mates after kicking their arses.

GTA III
★ FIRST OFFENCE

Realising that *GTA III* wasn't just a game but a vast playground for crazy misdeeds.

IKARI WARRIORS
★ DRIVING THE TANK

From *Halo*'s Scorpion to *Metal Slug*'s SV-001, tanks are the most empowering vehicles in videogames. For many, their first experience of jumping in and out of one came here.

MDK
★ SNIPER MODE

These days every game featuring bullets has a sniper weapon of sorts. *MDK* was the game to popularise and show off their potential, allowing players to be stood at one end of the world and stick a bullet in the head of an alien target standing at the opposite.

KILLER INSTINCT
★ KILLER COMBOS

Street Fighter II had dazzling special moves, *Mortal Kombat* its Fatalities, and Rare's *Killer Instinct* franchise was all about stringing together a ludicrous number of punches and kicks, while your annoyed mate threw down the SNES pad and used the time until the combo finished to put the kettle on.

SUPER MARIO KART
★ USING THE CAPE FEATHER IN GHOST VALLEY 1

The Cape Feather has only appeared in the original *Super Mario Kart*. It's a shame, because Ghost Valley 1's famous short cut demonstrated how it could be put to great use.

NIGHTS INTO DREAMS
★ THE LEAP OF FAITH

The leap of faith at the beginning of Twin Seeds is said to represent Elliot and Claris discovering their inner courage. Taking to the skies, they are finally prepared for the final battle with Wizeman.

SONIC ADVENTURE
★ WHALE CHASE

Racing Sonic through Emerald Coast as all concerns about his jump into 3D quickly melted away. Unfortunately, the feeling didn't last long.

PARAPPA THE RAPPER
★ THE FINAL RAP

It's a combination of neat semi-freestyle solo rapping, a catchy song and a club full of flat animals getting behind your rhythm-action skills that makes this one of the most uplifting moments in videogames.

SABRE WULF
★ CRYING WULF

Frantically running around the vibrant jungles of *Sabre Wulf* and yelping with panic as you encounter the titular wolf. Sorry, should that be 'Wulf'?









FEUD
★ CAT AND MOUSE
Picking herbs might not sound exciting, but when your evil twin is doing the same thing in order to make the best spells, the act becomes an amazingly tense game of cat and mouse. The sense of panic you feel when discovered by Leanoric is only matched by the sheer triumph that comes from turning the tables on him.

WIZBALL
★ COLOURFILL
Watching the drab monotone world of Wizworld slowly come back to life as you collect paint drops and restore the ugly world to its original, vibrant glory.

DRILLER
★ TAKING IN THE SCENE
Painstakingly crawling around the huge moon of Mitral and realising that you were experiencing something seemingly inconceivable on your humble 8-bit micro.

MONKEY ISLAND 2
★ LET'S PRETEND
Depending on who you ask, the ending of *Monkey Island 2* is either a stroke of genius or an evil joke that should be instantly dismissed from memory. Regardless of which side of the argument you take, it's certainly a great gaming moment, turning everything you thought about the series on its head. The adventures in the two games equate to nothing more than a pair of brothers playing at being pirates.

AXELAY
★ ENTER WAYLER
Watching Wayler menacingly appear from a pool of lava for the first time. Look out for his giant, crushing hands!

PANZER DRAGOON SAGA
★ MISSILE CHASE
Great moments come quickly and often in Team Andromeda's superb Saturn game. One of the most gripping moments, though, comes when you're chasing after a rogue missile and trying to stop it from decimating a peaceful village.

BULLET HELL
★ STAY ON TARGET
It doesn't matter whether it's an early example of the genre like *Batsugun* or more recent example such as *Deathsmiles* or *Mushihime-sama Futari*, nothing beats the satisfaction of successfully weaving through your first bullet pattern.

ADVENTURE
★ THAR BE DRAGONS
It may look like a duck, but getting chased by a dragon in *Adventure* is one of the scariest moments in Atari 2600 gaming.

SUPER MARIO 64
★ BYE BYE BOWSER
Grabbing Bowser by his tail and spinning him around until you send him into the ether.

SMASH TV
★ MUTOID MAN
As far as videogame bosses go, few are as menacing and memorable as Mutoid Man. The moment this huge, imposing man-tank wheeled his way into the battle arena, a feeling of both dread and awe hit the player.

SHENMUE
★ RUMBLE IN THE DOCKS
Part of the epic finale to *Shenmue* sees Ryo calling upon



DEVELOPER HIGHLIGHTS

BILL HARBISON
"My favourite gaming moment was around ten years ago when I introduced my son to the world of videogames. At the age of around five, my son, Edward, was watching me play *Ocarina Of Time*. I decided to hand him the controller and show him what happened on the screen when you moved the thumbstick around and pressed the buttons. Within a few minutes, he was running around, climbing ladders and jumping off cliffs. It was a proud moment.

After a while he became bored of the repetition and threw the controller on the floor. The impact must have loosened something inside the controller and I watched in horror as the pause menu flashed up and started rapidly selecting my saved game slots. I pulled the controller from the N64 but it was too late; before I could get to it my entire progress was deleted. I was mortified. I had been playing that game for weeks and it was gone in a matter of seconds. My son then continued to play with his toys.

I didn't play *Ocarina Of Time* again until last year when I bought a 3DS and I have been thoroughly enjoying it the second time round. Edward, now nearly 16 years old, doesn't get near it."









DEVELOPER HIGHLIGHTS

DAVE COLLIER
"I suppose it would have to be the *Counter-Strike* mod for *Half-Life*. The second I started playing I was hooked, which was a first for me. The best in-game moment was when I was playing a team game; I was backup for Andy Clark and we were ambushing players as they approached and came through a doorway. We totally creamed the other team."

all the martial arts techniques he's learnt to fight 70 members of the Mad Angels gang. Yes, 70. It's an action-filled climax, with completion of the game unlocking a time-trial version of the battle.

WHERE TIME STOOD STILL
★ PTERODACTYL SNATCH

A game world where danger feels omnipresent and any one of the characters in your charge could be snatched away at any moment is affecting stuff. Commonplace in games like *Fallout 3* and *Skyrim*, this game did it waaaaaaaaay before them.

MIKE TYSON'S PUNCH-OUT!!
★ FIGHTING MIKE TYSON

Who wouldn't want to fight Iron Mike, especially in 1987? What, no one? Well, Nintendo offered the chance when it made him the final boss in the NES version of *Punch-Out!!*. Not only could he floor you in a single punch, but defeat at his padded fists ended in an instant game over. No pressure, then.

SINISTAR
★ SINISTAR, OF COURSE

'I am Sinistar!', 'I hunger, coward!', 'Run, run, run!' You get the idea.

SPACE INVADERS
★ THE NIPPY LONE BLIGHTER

The way the game gradually sped up until there was only one annoying invader left proved to be a simple but effective way to ramp up the tension.

MANIAC MANSION
★ MICROWAVING THE HAMSTER

One of the edgier jokes in *Maniac Mansion* sees players able to pluck Weird Ed's hamster from its cage and explode it in the kitchen microwave. Give the steaming remains back to Ed and he kills you. Lovely stuff.

SOUL EDGE
★ TO LOVE! TO SHINE!

In terms of attract screens, few have been cooler than *Soul Edge*. The stunning opening CG cut-scene and catchy music, *Edge Of Soul*, still give us goosebumps. The game wasn't bad either.

STREET FIGHTER II: THE WORLD WARRIOR
★ NOT YOUR USUAL FIGHTERS

Aside from its striking visuals and the sheer fluidity of the game, realising that its band of colourful fighters had astonishing special powers that required a degree of dexterity to perform and perfect led to picking lasting favourites.

ZORK
★ GETTING EATEN BY THE GRUE

Adventurers who went exploring in the dark ran the risk of getting





DEVELOPER HIGHLIGHTS

DAVID PERRY

"I'm sitting at a table with Hideo Kojima (*Metal Gear Solid*) and Stan Lee (*Spider-Man*), and we are signing autographs. There are lines of people. Finally, Stan Lee runs out of people interested in his autograph and Hideo Kojima still has a long, long line of people having him sign their wallets, clothing, etc. Stan Lee leans back in his chair and says to me: "Who is this guy?""















eaten by a sinister presence known as the Grue. You're left to fill in the violent and bloody visual blanks of what happened when he caught you.

ELITE
★ SPACE DOCKING

It's impressive enough just seeing the Cobra Mk III rotating majestically in space for the first time, but just you wait until you attempt your first dock. It's one of the most intense experiences you can ever witness on an 8-bit micro.

RESCUE ON FRACTALUS!
★ THAT'S NO PILOT

Getting scared witless by a Jaggi won't be an experience forgotten in a hurry.

WORLD OF WARCRAFT
★ FLIGHTS OF FANTASY

The name of the game is something of a giveaway, but it's not until you take a ride on your first flying beast of burden that you realise just how vast the world of *Warcraft* actually is.

ZELDA: OCARINA OF TIME
★ I'M IN A WIDE OPEN SPACE

It remains an obvious one, but stepping out onto Hyrule Field for the first time. The sheer size and the realisation that you can pretty much go anywhere you want remains unmatched by any similar game, *Zelda* or otherwise.

CHASE HQ
★ TAKING DOWN YOUR FIRST PERP

Chasing after bad guys in your modified Porsche is fun enough, but finally ramming them off the road remains one of the most exhilarating experiences the arcades could offer. "Let's go, Mr Driver!"

SILENT HILL
★ SHUT THAT DOOR

Silent Hill is a franchise full of powerful moments, but few can match the sheer guilt you feel after leaving Lisa to die a lonely death. As she begins to understand what is happening in the world around her, she starts to bleed and a frightened Harry pushes her away and bars the door. As you listen to her futile pounding against the door, you realise that you're just as much of a coward as Harry is.

MAX PAYNE
★ BULLET TIME

It might not have been the first game to feature 'bullet time', but never has it been cooler than in *Max Payne*. The best thing about it? No matter how often you use the feature, it's still as amazing as the first time.

PILOTWINGS
★ HANG GLIDE HEAVEN

That feeling of serenity as you fly through the Mode 7 skies was emblematic of what the new hardware could do.

POKÉMON RED & BLUE
★ I CHOOSE YOU!

For what seems inconsequential at the beginning of the game, choosing your first Pokémon is a massive deal. You build a personal bond with them throughout your adventure that no other game can match.

QUAKE
★ ROCKET MAN

Pulling off your first successful rocket jump without killing yourself.

READER MOMENTS

Readers share some of their all-time favourite gaming moments

In *Tomb Raider* when you are in the sphinx room and you climb up onto it and then suddenly the camera zooms out and you see how vast the cavern is. Really breathtaking.
Thurstan Johnston

The first time you combine Head and Heels and not wanting to separate them later, even though you have to in order to continue with the game.
Shawn Pomeroy Habib

Stepping out of the grey, claustrophobic pizza that is Midgar into the green expanse of Gaia in *Final Fantasy VII*.
Simon Booth

Jumping atop Yoshi for the first time in *Super Mario World* with that awesome sound effect.
Tim Fitches

Acquiring Epona in *Ocarina Of Time* and jumping over the fence to the rousing symphony of an orchestra. What a beautiful moment.
Lee Beardsmore

SNAAAAAAAAAAAAKE!!!
Karlos

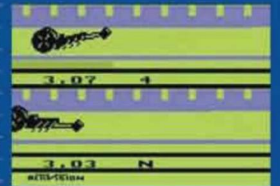




DAVID CRANE'S Tricks of the Trade

The modest power of the Atari VCS meant that getting it to perform beyond its considerable limitations was a constant battle for developers. Fortunately for Atari, Inc., this battle was fought by programmers with a talent for getting the best from the machine. In a special feature for Retro Gamer's 100th issue, David Crane, in his own words, shares a few of the tricks and graphics techniques he employed to create his 1982 VCS racing game, Grand Prix.

Still known as Mr Pitfall…



I have been programming computers since 1971, and designing and programming games since 1977. In that time I have programmed in 25 different computer languages and made games for 25 game consoles and systems. Combining console games, browser games, and mobile, I have published right around 100 games thus far. I still design and program games every day and I have some interesting things in the works.

Despite this body of work, I am still known as "Mr. Pitfall". That's okay, I'm used to it. But I have been a part of dozens of innovations over the years – both creative and technical – many of which are a great source of pride for me. Occasionally I like to shine a light on one or two of those, bringing them out from under Pitfall's shadow. The Atari 2600 was the most technically-challenged game console ever made, so it follows that the most interesting technical challenges arose when making games for that system.

A perfect example of this is the game Grand Prix, published by Activision for use on the Atari 2600 in 1982.



A LITTLE BACKGROUND ON THE ATARI 2600 HARDWARE:

■ The Atari 2600 was designed to display two small, single-colour, 8-bit objects. But the thousands of games made for that system clearly show that the hardware is capable of more. If the game programmer can write an efficient loop, any hardware feature available can be applied to each object. It was the combination of extraordinarily tight software with these obscure hardware options that made many of the classic 2600 games possible.

For example, as can be seen in *Air Sea Battle*, the graphic objects can be used several times down the screen, creating a number of enemy airplanes flying at different altitudes. In the aerial games within *Combat* we sometimes see airplanes that are two or four times wider than the others, or flying in squadrons of two or three identical objects. The ability of the hardware to stretch or repeat the pixels of the display objects horizontally provided some of the most important tools to game programmers working on the 2600.

Every 2600 game required the programmer to write an efficient display loop just to use the hardware as it was intended by its designers. If the programmer writes an extremely efficient loop, any of the available hardware features can be applied to every single scan line of the display image. *Grand Prix* does all of that, and more.



THE PLAYER'S CAR:

■ The player's car in *Grand Prix* begins with a simple binary table created in ROM, 30 8-bit bytes long. This is a logical use of the 2600's graphic hardware given its two 8-bit wide display objects. The first byte of the ROM table is copied to the display register during the first scan line of its display, the second byte in the second line, etc.



This is what the ROM pattern looks like, and this is how the basic car shape would appear on screen without some sort of trickery. But if the display loop program can be made to handle extra data, the stretch, repeat, and colour registers can be changed for every scan line of the actual image.

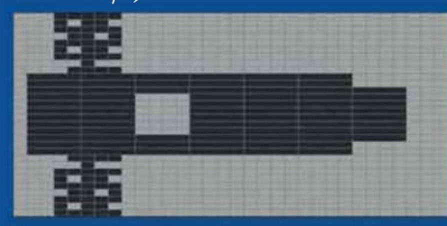
Creating this car using all of the trickiest hardware features of the 2600 began as a research project. I already knew that I could likely make this car (at least in a single colour) thanks to pioneering work done by Bob Whitehead on Activision's *Boxing* game. But *Boxing* had only two objects in the game playfield, and I would need many more than that. The boxers were a single colour and I knew I needed to paint each scan line of my objects or they wouldn't look like cars.

After several weeks of drawing pixels on graph paper, writing and rewriting the display loop program, and squeezing every microprocessor cycle out of the code as possible I finally had the red player's car on a 2600 screen. There was much left to do, but at least I knew that a game like *Grand Prix* was possible.

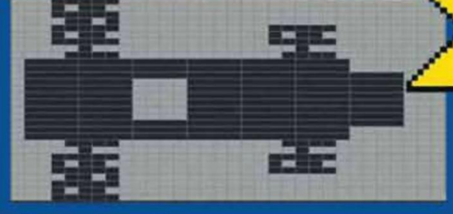
I could put bushes along the side of the road, moving them right to left to simulate the player's car and reference camera racing left to right. (Note that the bushes used one of the hardware 'repeat' modes showing the same pixels repeated horizontally.) By changing the colour tables that paint the red car, I could surely use the same graphics techniques that created the player's car to make the other cars.

Unfortunately, this just wasn't possible. It turned out that the opponent cars presented a problem that made them seven times harder than the player's car!

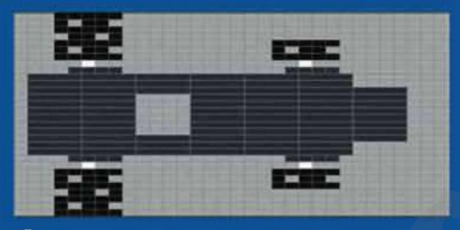
The following images illustrate how this simple 30 byte ROM image is manipulated to make the player's car in Grand Prix:



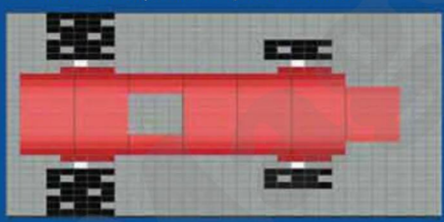
1 Expand the middle of the car graphics from one pixel per bit to four pixels per bit.



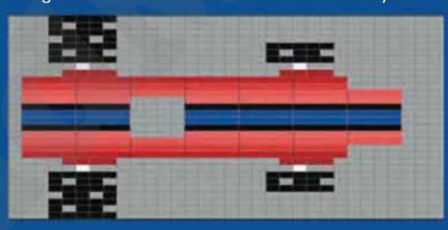
2 Repeat one half of the rear tyre and its axle a second time across the screen to form the front tire.



3 Change the colour of the display object every scan line to paint the tyres and axle.



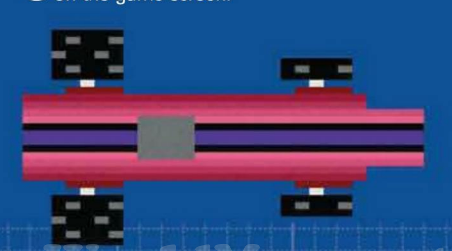
4 Colour the centre, stretched pixels with a gradient to simulate a rounded car body.



5 For a finishing touch add a racing stripe down the middle of the car.



6 And you get the player's red car as it is seen on the game screen.



WRAPAROUND:

■ About a decade into the videogame business, games like *Pitfall!* and *Warren Robinett's Adventure* expanded their game's universe to start using multiple screens. When Pitfall Harry ran off the right edge of one screen, he appeared at the left edge of the next. Before that, most games were played on a single screen, whether in the arcade or the home.

Consider *Asteroids*. During play you seemed to be flying around in space, but if you flew off the right side of the screen, your ship would appear from the left. It was the same with the asteroids; every object would wrap around side-to-side, and top-to-bottom. The game would have been harder to play without that. Knowing how objects wrapped on the screen meant that a player could predict the pattern of incoming obstacles.

This feature was known as wraparound, and the 2600 hardware was designed for it. It can be seen on many games, but it is most apparent when the display objects are quad-sized. (Like the 'bomber' in the aerial games in *Combat*.) There are 160 display pixels on the 2600 screen, and if an object is placed such that one of its pixels extends to pixel 161, that pixel is seen on the left side of the screen.

A common trick we used on 2600 games was to place an 8-bit wide black stripe down the left side of the screen. It would hide up to 8 pixels of wraparound. Most game objects were usually only 8 bits wide, so that stripe was very useful.

The opponent cars in *Grand Prix* had to scroll on and offscreen smoothly, and they were 28 pixels wide. An 8 pixel stripe can't cover the wraparound of such large objects; it'd look terrible if parts of the car were seen on the left as the car is scrolling from the right.

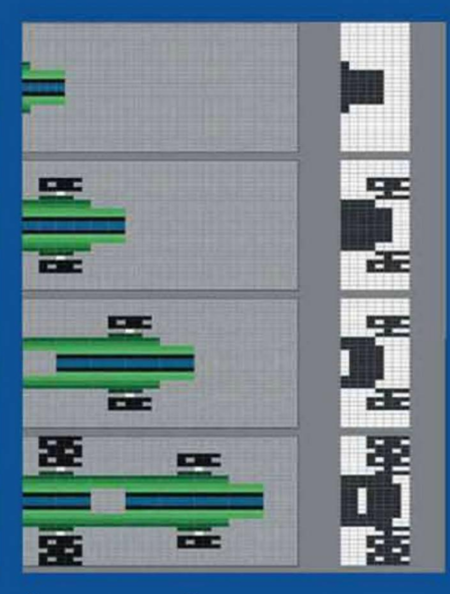


OPPONENT CARS:

■ The opponent cars use the same graphics as the player car when fully on the screen. But those graphics have to be modified to make it possible for the car to scroll smoothly *off* the screen. With the 8-bit masking object along the left edge of the screen, up to 8 pixels of the car can be hidden as it scrolls on and off the screen.

As the car scrolls past the right edge of the screen its rightmost 8 pixels are hidden behind the masking object. Then the car graphics must be modified to display fewer pixels near the front of the car, effectively lopping off the front 8 pixels of the car. If this is done every time the car moves 8 pixels farther off screen, no pixels should ever be visible past the masking object on the screen's left edge.

Making a new graphic that lops 8 pixels off the front of the car sounds simple – and it would be using modern game hardware and tools. But remember, the *Grand Prix* car graphics are combined with repeat and quad width hardware tricks, as well as a separate colour table. And the highest-tech tool we had for developing these objects was graph paper. Making one car table was hard enough; but smooth scrolling requires a total of seven.



Opponent car scrolling off

Opponent car scrolling on



Our thoughts



CONSIDERING *GRAND PRIX* exhibits similar score-besting gameplay to David's earlier VCS racer *Dragster*, it wouldn't be unreasonable for us to class it as something of a spiritual sequel. Published by Activision in 1982, *Grand Prix*'s gameplay is split across four straight tracks of increasing length and difficulty, and finds players having to carefully overtake other racers and avoid oil patches to finish the race in the fastest time possible.

Through its effective sense of speed, colourful visuals, authentic sound effects, and neat graphics tricks and presentational touches (such as the rotational effect on the car's tyres and a clock at the bottom of the screen that measures your best time to hundredths of a second), it's a great technical showcase for the VCS, and proves what could be achieved on its limited hardware.

ANIMATING TYRES:

■ The cars in *Grand Prix* would never truly come alive unless their tyres could appear to rotate. Rather than make the tyres solid black I removed pixels that let the street colour show through. (I would happily have used a different colour, but that was not possible on the 2600. Each line of graphics could only be a single colour, so pixels were either on or off – the line colour or transparent.)

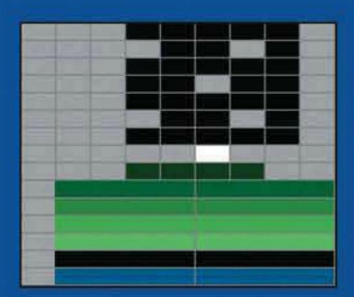
Ask any animator and they will tell you that the minimum number of images needed to provide motion animation is three. Alternate between two pictures and the differences in the images simply shuffle back and forth. But loop three carefully crafted images and you can simulate motion.

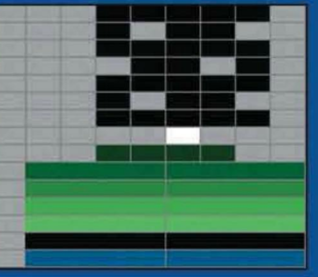
Loop through these three tyre pictures and they appear to rotate. Control the speed at which they are sequenced and the speed of rotation of the tyres will appear to change. This animation certainly looks great, but now we need three slightly different versions of every graphic table that contains tyres (which is all but one of them).

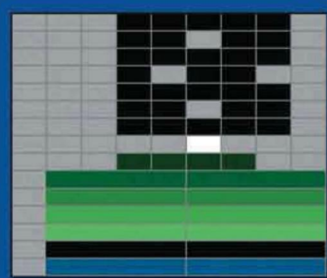
So the car graphics in *Grand Prix* began as a single 30-byte table. Two 30-byte tables were then created – one to control the repeat and quad hardware and one for line-by-line colour. Six sets of tables had to be added to scroll the opponent cars on and off the screen smoothly. And three copies of those sets of tables were needed if all cars in all positions were to have the appearance of rotating tyres.

After removing some redundancies, the *Grand Prix* ROM had more than 30 tables, each 32 bytes long just to define the cars. That filled one quarter of the game ROM and took up the first 10 weeks of development.

The rest of the ROM, and the rest of that calendar year was taken up by turning a graphic research project into a compelling game.









David Crane's Resume

PROGRAMMING LANGUAGES:

MAINFRAME COMPUTER LANGUAGES:

FORTRAN
RPG
COBOL
BASIC

MICROPROCESSOR ASSEMBLY LANGUAGES:

6502
Intel 8080
National Semiconductor PACE 16 bit
National Semiconductor SC/MP 8 bit
GI-1610
Zilog Z80
65816
Intel 8048
80286

MICROPROCESSOR PROGRAMMING LANGUAGES:

C
C++
Objective C



J2ME
Brew

MICROCONTROLLER ASSEMBLY LANGUAGES:

NEC microcontroller assembly language

SCRIPTING LANGUAGES:

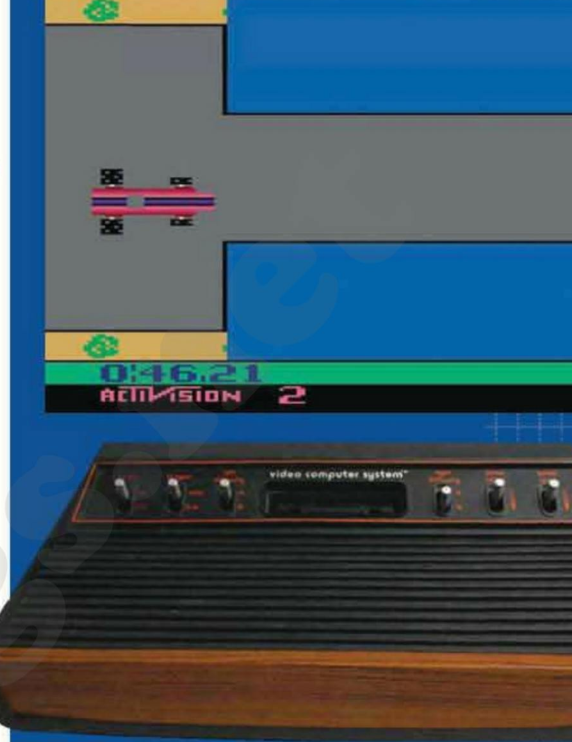
Lingo
Actionscript
Lua
Javascript
HTML-5

ENGINEERING LANGUAGES:

SPICE
VHDL

VIDEO GAME CONSOLES AND PLATFORMS:

Atari 2600
Atari 5200
Atari 7800
Atari 400
Atari 800
Magnavox Odyssey II
Mattel Intellivision
Colecovision
Nintendo NES
Nintendo SNES
Nintendo Game Boy
Nintendo DS
Sega Master System
Sega Genesis / Mega Drive
Sega CD / Mega CD
Commodore C64
Commodore C128
Sony Playstation
Nokia Series 60 feature phones
LG VX4400
LG VX6000
Shockwave
Apple iPhone
Apple iPod touch
Apple iPad





It's a tough job but somebody has to do it

As I mentioned above, of all the games on all of the game consoles and in all the programming languages, programming on the Atari 2600 was by far the hardest. Or maybe a more accurate characterisation is to say it was the "most challenging" because, really, it was also the most fun. I guess those of us who thrived on the task enjoyed the challenge.

A co-worker in that era once said to me, "Millions of people play these games, but fewer than 25 people in the world know how hard they are to make." Maybe that was part of the attraction. But whatever the attraction, that part of my career will always be my favorite.





ANDREW BRAYBROOK

Andrew Braybrook created some of the greatest Commodore 64 games of all time, including Paradroid and Uridium, before disappearing. Now, in a **Retro Gamer** exclusive, he reveals the methods behind his game creation, his interest in music, and why he'll always love programming

LIKE HIS FRIEND Steve Turner, Andrew was working on computers long before he programmed his first game. Several meetings with Steve saw Andrew joining his company, Graftgold, and his innovative games and slick coding soon earned accolades from reviewers and gamers alike. After creating many memorable games for the C64, Braybrook turned his talents to the Amiga, and continued to deliver the same innovative and imaginative games. Graftgold struggled in the PlayStation era and eventually folded, and Andrew vanished as well. Until now…

RETRO GAMER: What did you want to do when you were still at school?

ANDREW BRAYBROOK: I didn't have much idea of what I wanted to do when I was at school. My dad said airline pilot or bank manager were the best jobs. I'd have been happy driving a JCB. The grammar school I went to was university-oriented. The careers office just had brochures for the universities. By the end of A-levels I'd had my fill of education and was keen to earn some money to buy a nice bass guitar. I went to the careers office and asked about jobs. They said: 'Just apply to some universities and they'll help you when you've graduated.' Computers hadn't really made an impact at that time. They had a desk that contained a 1K RAM computer with a card reader and a printer. There was no video screen, so I never twigged the importance of that. The Electronics Club had a Commodore PET, but I wasn't in it so that passed me by too.



RG: So what was your introduction to videogames?

AB: It was probably the guys I worked with at GEC Marconi – Robert, Richard and Keith – in my first job, who introduced me to *Attack Of The Mutant Camels* on the Commodore 64. We'd meet up at the weekends and play computer games. Robert had a VIC-20 as well. It wasn't until some years later when I met Jeff Minter that I realised some of the tricks he had to do to get that complex a program written in 3K of RAM, with all the graphics and sounds too. My smallest game ran to about 24K.

RG: Is it true that you're a big shoot-'em-up fan?

AB: We definitely got our money's worth out of Jeff Minter's early games. We played *Matrix*, *Attack Of The Mutant Camels*, *Revenge Of The Mutant Camels*… At that stage I still hadn't got any ambition to write on micros, but I was playing the arcade games of the day: *Breakout*, *Space Invaders*, *Asteroids*, *Battlezone*, *Galaxian* and *Pac-Man*. Each pub had a different game, so we would tour round them all on a Friday evening to play each game. We were quite competitive and always ended up in the chip shop playing *Asteroids*. We liked the challenge and the speed of the games.

RG: What was the first computer you owned?

AB: It was quite a lot later when I bought a computer. It was my dad who bought a ZX80, then a ZX81, and a Dragon 32. I started writing games in BASIC on those to start with. I was also staying late at Marconi and writing games in COBOL by that time. So the first computer I owned… that would have been a Commodore 64 that I bought about five years later. Up until then I had only used the Commodore 64 at Graftgold and I was still visiting the guys from GEC.

RG: How did you learn computer code? Were you self-taught?

AB: Steve Turner was writing for the ZX Spectrum in 1983 in machine code – not even assembler at that time; he was writing code in hexadecimal. We must have talked about me joining him writing games a few times. We decided that I should

Andrew Braybrook left the industry in 1998 and has been silent on it since. It wasn't until he read our article on best friend Steve Turner that he agreed to an exclusive interview.



SELECTED TIMELINE

3D Lunattack (conversion) 1985
Gribbly's Day Out 1985
Paradroid 1985
Uridium 1986
Alleykat 1986
Morpheus 1987
Intensity 1988
Gribbly's Special Day Out 1989
Heavy Metal Paradroid 1989
Rainbow Islands 1990
Paradroid 90 1990
Simulcra 1990
Fire & Ice 1992
Fire & Ice Christmas Special Edition 1992
Uridium 2 1993
Virocop 1995
Hardcorps Cancelled

"Making games was the best job in the world. The weekends were an inconvenience because I couldn't go to the office"

support a different platform and cited the Dragon 32 as the second most popular machine. So I bought a book on 6809 assembler and started to write some simple routines to interface to BASIC. It was slow going because I didn't have an assembler either. I wrote a plot routine to display a spaceship on the screen; I was working in hexadecimal too. That was too much like hard work so I bought an assembler for the Dragon 32. That made life a lot easier. I had learnt the power of assembler from the Marconi technical support team. Assembler was so much faster than COBOL, but they always hid the assembler books when I went to visit them. I had a rather idealistic approach, though; it takes a while to get a grip on how little you could do 50 times a second on those computers.

RG: What do you enjoy about coding?

AB: Coding is an almost endless repeat cycle of finding and fixing problems, and they are self-created! Only at the very end does it work without any problems. If we could just write error-free code then there wouldn't ever be any problems to solve. I do get a great deal of satisfaction from fixing problems, though, as it brings out the detective in me. The creative side can be a bind too when you can't think of something interesting to do, but it is rewarding trying to impress people. The best bit for me, though, was the variety of the work because every day is solving something different or creating something new. Taking a game right from initial design through to promoting and demoing the final

* FIVE TO PLAY

PARADROID



BACK IN ISSUE 96, readers voted *Paradroid* as the best C64 game of all time. It's a statement we find impossible to disagree with. *Paradroid* was Andrew's second game for the C64 and it's easily his finest moment.

Taking control of a weaker prototype droid called the Influence Device, you must traverse a huge, multi-tiered ship and take out all the other droids that inhabit it. While these mechanoids are far more powerful than your character, your droid has the ability to take over stronger machines, gaining access to their greater armour and firepower, via a neat little mini-game. *Paradroid* effortlessly blends hardcore shooting with a healthy dose of strategy to become one of the C64's most unusual and entertaining titles. Braybrook returned to the world of *Paradroid* twice, first with a tweaked update in 1989's *Heavy Metal Paradroid*, and then with a full-blown Amiga sequel, *Paradroid 90*, in 1990. The original will always be our favourite, though.

URIDIUM



ANDREW WAS A huge fan of shoot-'em-ups, so many of his games emulated the titles he used to play in various pubs and chip shops. *Uridium* was easily one of his best, combining typically clever coding with solid gameplay that was polished to perfection. Taking control of the Manta Class space fighter, you must fly over one of 15 huge dreadnoughts, taking out installations and defending ships. Survive enough waves and you'll get to land your fighter, earn a brief rest, then move on to the next dreadnought. It's a simple game, to be sure, but one that, even now, is amazingly exhilarating to play through.

RAINBOW ISLANDS



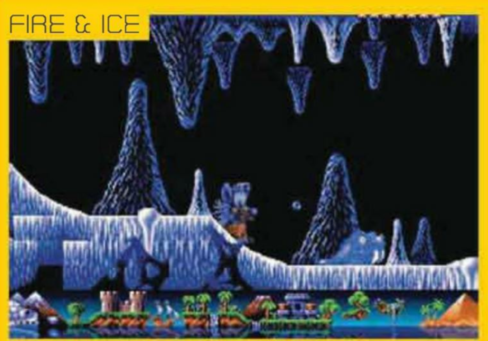
RAINBOW ISLANDS IS quite simply one of the finest arcade conversions on the Amiga, even if it is missing a few little elements here and there. Andrew was once again on coding duties, while John Cumming worked on the frightfully authentic visuals. Abetted by Steve Turner's rousing rendition of the original theme tune, *Rainbow Islands* was a resounding success for Graftgold and proved just how good the Amiga was at emulating hit arcade games of the time. What's most interesting about *Rainbow Islands* is that it's Graftgold's only arcade conversion. Imagine if it had got its hands on some of the other popular arcade games of the time…

GRIBBLY'S DAY OUT



ANDREW'S FIRST ORIGINAL game on the C64 remains a highly entertaining title and another refreshing mishmash of genres. Taking control of the titular Gribbly, you must explore huge caverns and rescue the little gribblets from a selection of nasty enemies. Clever gameplay mechanics, especially the evolving enemies, give an indication of the brilliance that would come in Andrew's later games, while the silky smooth scrolling and larger-than-life graphics proved that he was no slouch when it came to coding. Then there's Gribbly himself, who's full of character, beaming when things go his way and noticeably upset when they get on top of him.

FIRE & ICE



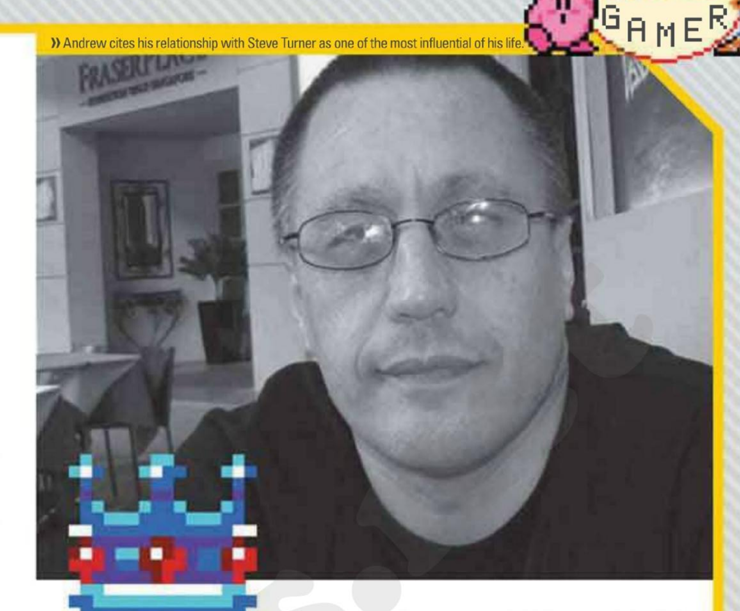
GRAFTGOLD PRODUCED TWO sequels and one arcade conversion for the Amiga. The rest of its four releases for the machine were all original ideas. *Fire & Ice* is one such example, and while its lead character, Cool Coyote, looks a little like Sega's Sonic, *Fire & Ice* doesn't feel like a simple *Sonic* clone. Unlike similar platformers that enable you to dispatch enemies with a hit on the head, *Fire & Ice* requires you to freeze critters first. The use of freezing becomes quite inventive on later stages, while the responsive controls and gorgeous visuals are reminiscent of many console platformers of the time. Very impressive.

game gives you an insight into a lot of different aspects of the business.

RG: Was there a particular language you preferred using?
AB: We always used assembler on 8-bit, except where Steve didn't have a Spectrum assembler that he liked, so he was writing in machine code. Assembler is 'assembled' into machine code, so they are the same, but one is much easier to read! We also wrote in assembler on 16-bit and only crossed over to C when we got to the PC, PlayStation and Sega Saturn. By that time even writing in assembler was getting difficult because the CPU was reading more than one instruction at a time. I did write a movie display function for our last PC game in 8086 assembler because we needed raw speed, but mostly C gave good enough results. Writing in assembler is very low-level, but it was the fastest a computer chip could get the job done – the no-fat approach. We'd study our scrolling routines to try to make them just one cycle faster. One technique we used was to change the background colour between functions so we'd get a constant display on screen at the sides to show where all the time was being used. The idea was to get everything moved within one TV frame, a 50th of a second. So you needed to know where the time was being spent.

RG: Like Steve, your initial programming skills weren't in gaming. How did this help with game design? Did it make you more methodical?
AB: I'd had a good, thorough training at GEC Marconi and knew how to work independently and with other team members. I think we both had good methodical approaches to solving problems. I have come to learn that IT is all about getting things wrong until the very last change when you finally get it right and the program is done. Don't stop until you're sure you've got to that point. With games, once it was released it had to be right; you suddenly have a lot of people testing the code and you can't fix it if they find a fault. Maybe nowadays that doesn't apply with the hotfixes that are available. Of course, the code is much bigger and more complex so there's bound to be mistakes. Coding never got quicker because the games got bigger, and even though we reused old code, we always added more. *Gribbly's Day Out* took about three months to write, and I did the graphics and level design in that time too. *Intensity* took nine months to write and design. *Uridium 2* took 18 months to code with probably about the same time spent on graphics, and that's just such a long time to be working on one title.

RG: Tell us a little about *Assassin*.
AB: This was my first multiplayer game, written in COBOL. It was set in a multi-level dungeon and the last player alive wins. I wanted it to be in real-time, which meant getting a bit of help from Tech Services to allow one computer to monitor the game and collect information about all the players as they move and fire. There were doorways between the levels and players could only see other players by line of sight. It was a top-down view, so certainly a prototype for *Paradroid.* We added computer-run 'assassins' that walked around the level and were quite adept at killing the players. So we tended to have to gang up on the assassins before taking each other out. Come five o'clock we'd occupy most of the terminals and set up a session. One player, Splodge, worked out a technique for rapid firing that I hadn't anticipated. He was winning every game until HR showed us how he was doing it. Once we all knew the trick it evened things up a bit. I was always impressed with his lateral-thinking ability.


» Andrew cites his relationship with Steve Turner as one of the most influential of his life.

> I think it's rare that you meet someone that has such an important effect on your life

RG: How did your friendship with Steve Turner form?
AB: I first saw Steve when our guitarist, who worked with Steve and is also called Steve, got him an audition with another band in our town. We went along to watch. He got the job and played with them for some time. There was a fair amount of equipment-lending in those days and Steve T lent us some gear for a gig we were doing. It's difficult to remember now, but we both had an interest in the early arcade games and used to tour the local hostelries to play the different games on offer. We also liked similar music and got interested in the home computers of the day. At some point Steve T joined Steve R and I in our band: No Class. We then decided to think up a new band name. I don't think we ever did finalise a new name, though. Much later we recorded a couple of demo tapes and naturally put No Class on the label. I think it's rare that you meet someone that has such an important effect on your life – maybe only four or five people in a whole lifetime. I owe a great deal to both Steves, as people who influenced me a lot in my life choices. We all still keep in touch and we know that if we ever needed some help then we'd all be there for each other. I don't suppose we'll ever have a Blues Brothers moment and try to get the band back together, but we all love music.

RG: What sort of music did you play, and how serious were you?
AB: I used to work the sound desk, then the bassist had to leave to concentrate on his studying, so they auditioned a couple of people, and then someone said that as I had long hair I should have a go. I learned a couple of songs and got the job. We started off playing rock covers: Hawkwind, Deep Purple, Black Sabbath. We did play some original songs too. I think it was quite instrumental – pun intended – in me wanting to get a job to pay for equipment rather than going off to university. My first gig was in a marquee in a field. We got complaints about the noise from one and a half miles away, and driving out of the field caused my car's exhaust to fall off. We used to rehearse once a week, which is not often enough. We did take it seriously and everyone wants to be a rock star, but it was just a fun thing for me to do. I never expected it to be my day job.

RG: Do you still jam with Steve now?
AB: Steve comes over and my guitars get played properly from time to time. We'd need a drummer to keep the beat, though. Actually Steve's the improviser; I tend to want to know exactly what all the notes are before I start. I must make more time to figure out how to play guitar properly now that I have some six-strings. I've started a small collection of guitars and basses. People say they come to my house to die, but I'll get there.

RG: Like Steve, you started off as a commercial programmer. Why did you move into games?
AB: There was a fairly hostile takeover of the computer centre where I worked, fuelled by a





personal vendetta between upper management. The whole place got reorganised and it became clear that we were going to get shut down; everyone was unhappy, so I was looking for another job. Steve had a similar experience at his place, and left to start writing a game. After a couple of months, Steve found a publisher and was on his third game. He had started earning royalties but was finding it boring working on his own. I didn't have to think twice about the chance to write a game for a home computer. I had written some BASIC games on the Dragon 32 and was keen to try some assembler. Writing games is part creativity and part programming, which suited us both.

RG: Did you play any of Steve's early games?
AB: My first games were conversions of Steve's, so the games were already largely designed. They already worked. Writing them certainly involved a fair amount of playtesting. I just had to make my versions play as well as his. I got to playtest Steve's next creations too, which were *Avalon* and *Dragontorc*. I spent quite a while playing those…

RG: What was it like having one of your best friends as your boss?
AB: I never really thought of it as a boss/employee situation. We worked on our own games, but it was always Steve's business and my job. It was a pretty good democracy, and as we had both worked in big companies we kept working a normal nine-to-five day. We usually both went off to the publisher together. We worked in Steve's dining room and just got on with the job. When the royalty statements came in we were quite competitive about who sold the most tapes that month.

> "I get a lot of satisfaction from fixing problems, as it brings out the detective in me"

RG: What was it like in the early days of Graftgold?
AB: Things were going quite well so Steve decided to create a limited company. We changed from ST Software to Graftgold. There were just the two of us and Steve moved house, so I had to drive a couple of miles to get there. He did up a room out the back of his garage and we put a couple of desks in there. We got PCs to write the games on and used proper development kits. It was getting more professional than just using the Commodore 64 and Spectrum on their own. *Uridium* and *Alleykat* were written there. I got a trip to Chicago to get a conversion started, and we started winning some awards in the magazines. It was a really good time because we had total design freedom and were not on advances, just royalties. I earned enough to put a deposit on my first house, so it really got me started.

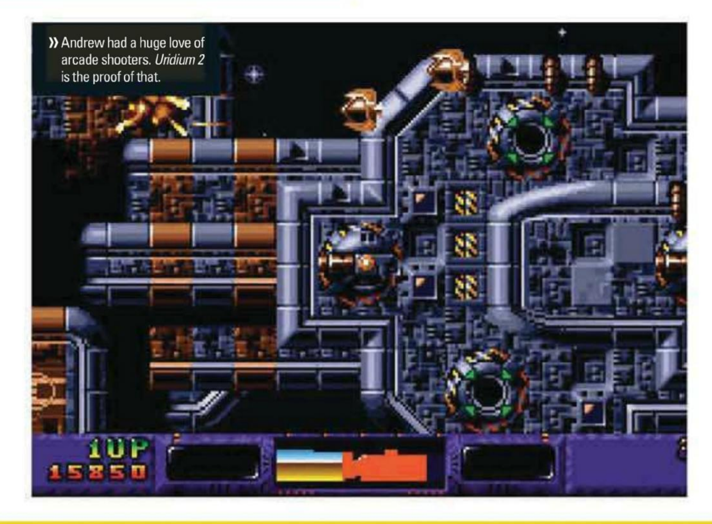
RG: Where did the idea for *Uridium* originate?
AB: I'd just finished *Paradroid* and was keen to write a game that ran at 50 frames per second. All arcade games ran at that sort of speed and I could easily see that scrolling quality was being lost. I wanted a game that scrolled quickly, and that only looks good if the screen is being updated at the same speed as the TV monitor.

RG: And how does it feel knowing our readers voted *Paradroid* as their favourite C64 game?
AB: That's certainly a great honour. It's the game that put Graftgold on the C64 map, and I'm impressed that it has endured.

RG: Some of your best work was on the C64. What is it you like about the system?
AB: The C64 had a lot of flexibility. My first C64 game used its bitmap mode, and I bet not many games did. That was like the Spectrum and Dragon 32. The clever guys, though, were using the character modes, which allowed smooth scrolling, and the sprites. Character modes also let us animate the backgrounds and change large areas quickly. It [better] matched the arcade games of the time, so we had plenty of material to observe and draw from. It was quick to develop ideas on. One of my favourite things was designing fonts. Jeff Minter always liked to do different fonts and it got a bit limiting sticking to 8x8 pixel blocks, especially when the letters have to be drawn in 7x7 pixels to leave gaps. So for *Gribbly's* I went large and did 8x16 and 16x16 pixel letters. There are two editions of *Gribbly's Day Out*, each with a different font and 16 different levels. *Paradroid* and *Uridium* used a similar system. By the time I got to *Morpheus* I had 24x16 fonts. Mainly, though, the game designs had to be good and we weren't trying to make things too complicated.

RG: So what did the C64 offer over its 8-bit peers?
AB: The C64 just had a good balance of sprites and colour modes and was professional enough that the chips were easy to use, and Commodore did a disk drive and a development kit early on. [After] seeing the hassles Steve had with getting colour onto the screen on the Spectrum, I was quite happy with what I had. I did snooker myself a bit at one point because some colours were shared across all the sprites and I wanted to use a couple of particular colours that made it difficult for me to draw the graphics and make them look nice. Sometimes it takes some other people's input to say: 'Try it this way instead.'

RG: So it's a learning process?
AB: You never stop learning; there's always something new to try. There



» Andrew had a huge love of arcade shooters. *Uridium 2* is the proof of that.

*NUMBER CRUNCHING

89 average *Alleykat*, *Gribbly's Special Day Out*, *Intensity*, *Morpheus*, *Paradroid* and *Uridium* scored in *Zzap!64*

18 months was how long it took Andrew to complete *Uridium 2* on the Amiga

1983 was the year when Andrew decided to start working with friend Steve Turner

Paradroid scored **97%** in *Zzap!64*. It remains one of the highest-scoring games in the magazine's history

Gribbly's Day Out took **3** months to finish. *Intensity* took a total of **9** months to complete

Andrew's excellent conversion of Taito's *Rainbow Islands* was released in **1990**

A total of **5** people worked on *Fire & Ice*

A total of **15** dreadnoughts must be defeated in *Uridium*

£2.99 was the budget price of *Heavy Metal Paradroid* in **1989**

8 people were involved with *Virocop* on the Amiga

was a natural progression through the games that I did where I was learning how to do things. Probably I'd not have invented what became known as a sprite multiplexer on my own. That was a method of reusing the eight hardware sprites to get more than eight objects on screen at once. Us games programmers met up from time to time and discussed coding, geeks that we are, and we were keen to show off ideas to each other.

Once you know something can be done, it's just a case of deciding how to do it. I had designed games with more than eight objects in the game arena, but only eight on screen at any time, and I hadn't thought how to get more than eight on screen at once. It's only later when you start to understand what the graphics chips are doing that you see how to harness that. It also sometimes takes seeing how other computer hardware works to make a breakthrough. That gave the game designs a new lease on life, and some great arcade conversions were done using multiplexer techniques, like *Terra Cresta*.

RG: Why do you only have a single Spectrum credit? Did you not like the machine?

AB: I think my only involvement with *Astroclone* was as chief playtester. I think Steve was at least using a proper assembler by this time rather than programming in machine code, keying strings of hexadecimal into files. I never learned Z80 code, as used on the Spectrum and Amstrad, though I was envious of the number of registers available on the chip – the 6502 chip just had three. We used to share our troubles and try to help each other with coding issues, so I picked up the basics. Converting Steve's early games had to be done mainly at a high level, and I rewrote the games by copying the concepts. To try to copy code line by line from a lot of registers to a few would result in very inefficient code; you have to redesign code to fit what you have. At least that way I got to learn how games work rather than just convert code.

RG: Why didn't you code for the Amstrad CPC?

AB: The Amstrad came along a bit late. Steve did some conversions of his games, as the Spectrum and Amstrad had the same Z80 chip; it meant he could reuse a lot of the game code. By that time I had my heart set on learning 68000 for the Amiga and ST. Steve enjoys a challenge, like 'convert those 20,000 lines of code in a fortnight', but I prefer to start afresh.



» Andrew missed out on coding for the Spectrum and CPC by jumping straight to the 16-bit platforms.

RG: Did you make any C64 games that never saw the light of day?

AB: I was working on another game after *Intensity* and had a title screen and a game screen demo. I was getting bogged down with colour choices again and was mighty keen to get to work on the 16-bit machines. Finally we got the go-ahead from the publisher, so since I was still playing with formats and didn't have a game design nailed down, we put that one away. I had managed to design a gameplay area made out of hexagons, so I wanted six-way movement rather than four. I had cells growing eggs and there were going to be mutations. Possibly still got a disk somewhere with a demo. That's all it was. There's no bin with games that didn't make it. There were plenty of design changes and graphical looks that weren't quite right, but we always adapted. We did have an early version of *Fire & Ice* with a Gribbly-style bouncing character, but that was considered too radical.

RG: How do you feel about the C64 hitting its 30th anniversary?

AB: It's quite extraordinary that we can still play those games, albeit sometimes on emulators running on PCs. Actually that in itself says something. One computer has enough time and speed to pretend to be another computer and do all the work of all the chips. The C64 could do a third of a million instructions per second; now PCs can do about 1,000 million instructions per second, and the graphics chips can do so much more. So I actually wouldn't mind trying to put together a retro game on the PC with few limitations. However, what made the C64 and all the other 8-bit computers special was that it was relatively easy for anyone to cheaply get started and quickly put a game together. We ran out of RAM so we had to finish the game! It was a special time and I feel lucky for the opportunity to get into writing games, as it was the best job in the world. Now there is a lot of commercial pressure and you need a large team to put a game together, so it's not so easy. We get the occasional letter and see people just starting university wanting to write a 3D *Paradroid* variant, but we haven't seen anyone finish one. I think the amount of work involved does overwhelm people.

RG: Do you have a favourite C64 game?

AB: There have certainly been a lot. Three of my favourites started on different platforms: *Elite*, *Dropzone* and *Manic Miner*, and the conversions weren't quite as good on the C64, so they shouldn't count. I even bought an Atari 600XL just to play *Dropzone*. I certainly played a lot of *Sheep In Space*, so that's probably the one for me.



RG: As Graftgold grew, did you find yourself having a more managerial role?

AB: We had been a two-man team for three years or so when we started to find other programmers. Gary Foreman was the first and he started off working from home. When Dominic [Robinson] and John [Cumming] joined we knew we needed a bigger office. At that time we were all 8-bit programmers and generally worked on our own graphics, though John started to do more graphical work. It was when we started 16-bit work with more colours and graphics resolution that we had to employ more graphics artists and divide up into teams. We had Jason [Page] doing programming and writing music and the sound and music players, so typically there would be one programmer, with one to three graphics artists working together. The sound and music was usually added quite late on, as it was best to design all the sound effects together and get the whole sound working once all the game events that would cause sounds were fairly well defined. Everyone on the team got involved in the game designs and made suggestions. The graphics artists became more responsible for level layouts and overall look, and there wasn't too much change. It helps to be diplomatic and flexible. Steve was the manager and was programming too. We had very self-motivated staff, so I was able to just concentrate on programming.

RG: How difficult was the transition from 2D gaming to 3D?

AB: *Simulcra* was our first game that really used 3D plotting. We had done 'pretend 3D' in the early days. We drew different sized images of the same object and carefully managed what was going on on-screen. Dominic did all the maths and *Simulcra* was plotting everything pixel by pixel on the bitmap. No fancy graphics cards there. He was really keen to be at the forefront of getting the code as fast as possible and work out all the tricks. Steve picked that game up and finished it with help in between and had learned all the maths too. I got involved in the gameplay only, and was still doing 'pretend 3D' with *Paradroid 90* and *Uridium 2*, representing depth with shadows but still rendering with pre-drawn graphics. The maths got a bit much for me. Steve seemed to enjoy it and got proper textured graphics working for *Moto-X*. We had a PlayStation version that used hardware to render, like graphics boards do on PCs now, but we had to write render routines to do the work on PCs without 3D cards. PC hardware went through a massive transition as boards were improved and DirectX was being developed.

RG: So it was a challenge?

AB: It felt like playing catch-up all the time. By that time the whole company was working on one game with specialists on the different versions and platforms. I was looking after the system code that was shared across all the platforms and helping out with algorithms and gameplay elements.



» [Amiga] *Virocop* was typically Graftgold. Stunning to look at and filled with invention.

I also remember doing the PC sound routines and building in doppler-shifted frequencies so that planes flying overhead would sound realistic, and was balancing sounds in stereo, and trying to add a bit of random frequency change because the same sound effect, however good, gets monotonous after a while. That was a little trick shown to us by an Australian programmer in about 1985. He did a puzzle game and tuned the sound effects to a scale and varied the effects using musical pitches to make it pleasant to listen to. He was a very clever guy and had also developed a fast technique for doing collision detection that we used in all of our 2D games from *Uridium* on. I hope he picked up some tips from us too.

RG: When did you see the writing on the wall for Graftgold?

AB: In 1996 things came to a halt when we just couldn't get a publisher to sign anything up. Renegade had decided to push a lot of investment to Sensible Software, and that left us looking for other publishers. We couldn't place anything and our developments came to an end. We had managed to do some conversions but it was getting difficult. We had to lay some people off, which was really hard. We had a Japanese publisher on board who were really good to work with, but they changed their plans and that delayed our development. Steve had been working all hours and was getting worn down. He had to stop in the end. We didn't owe any money but we weren't making any. At the eleventh hour we got a visit from Perfect Entertainment and they offered to buy into Graftgold, tool us up with better technology and give us access to their publishers.

RG: That sounds perfect.

AB: It sounded like a good idea, and we had worked with them before at BT. So we set about doing a tank game, with them doing the graphics and paying the wages. We had everybody working on the one game, which made us very vulnerable to any issues with that. It was difficult and politics started to play a part. It just didn't work out. The worst bit seems to be having lost the rights to the games. Anyone starting out for themselves should look at protecting the design rights in a separate company from the one writing the games. That way you keep ownership if anything goes wrong.

RG: What do you do now and how does it compare to making games?

AB: I moved into programming for a business software house. Fortunately they were recruiting heavily and knew games programmers are a reasonably bright sort. My early experience at GEC looked good on the old CV too. I needed a bit of stability after going for a couple of months without any wages, like all the other Graftgold people. Fortunately things went pretty well there and I persuaded Steve to join me. So we worked together for another 12 years or so until he retired at the end of 2010.

RG: Doesn't it get dull making business software?

AB: There's not a lot of creativity in insurance programming, it has to be said. Making videogames was the best job in the world; the weekends were an inconvenience because I couldn't go to the office. Unfortunately the reality of paying the bills every month means that sometimes we can't do what we want any more. I'm open to suggestions, though!

RG: Many 8-bit developers like Jeff Minter and Peter Harrap are starting to make a name for themselves on iOS. Is this something you've considered?

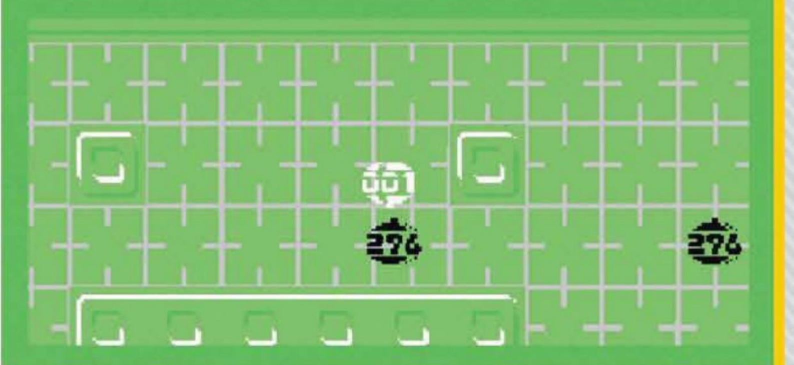
AB: Jeff's fabulously adaptable; there doesn't seem to be any platform he can't learn quickly. I'm a lot slower. It takes me a couple of games to get used to the hardware. I haven't looked at other systems, but I am now thinking that I would like to work for myself again and do something more creative. I don't need the fame, but I would like more creativity. Maybe mobile apps are what I should be looking at…

RG: What's your best memory of being in the games industry?

AB: I've worked with some very talented people at Graftgold and other companies, like The Bitmap Brothers. All through the Eighties and the first half of the Nineties it was the best job ever. We got to go to shows, award ceremonies; I went to Germany, France, the US and got to meet many other programmers. Second place would be spending a night in a haunted inn in Didcot before a trip to Ludlow; I felt that there was someone dusting in my room in the early hours, and Steve reckons he saw a ghostly maid in his room. The best memory, though, still has to be the job interview one Friday evening in August 1983. 'Do you fancy coming and working for me writing games?' 'Yeah, all right.' 'Okay, let's go down the pub.' Quickest job interview I ever did!





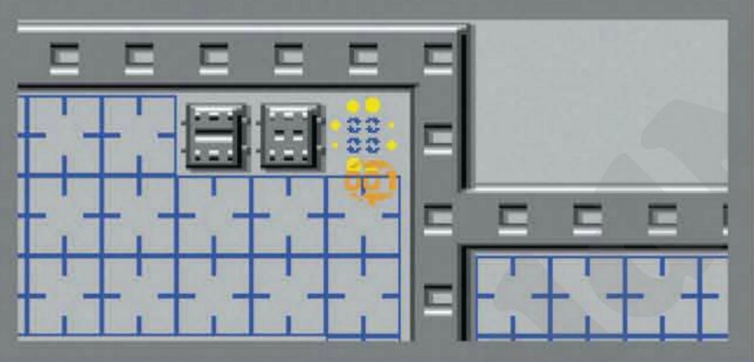


» [C64] The numbers on the droids indicate how strong they are, and how tough they are to hack into.

Transfer



75



» [C64] *Paradroid* is quite simply one of the best games to appear on the Commodore 64. Don't question us. Play it.

Game on!



0

Unit type 001 – Influence device
This is the unit that you currently control. Prepare to board Robo-Freighter Paradroid to eliminate all rogue robots.



» [C64] This is your Influence Device. He's weak on armour and firepower but can take over other droids.

THE MAKING OF… PARADROID

Andrew reveals the story behind the creation of his highest-scoring Commodore 64 game

Retro Gamer: *Paradroid* successfully combines two distinct genres. Did you purposely try to create something different?
Andrew Braybrook: I always followed my nose, trying to design a game that I would enjoy playing. I was more interested in using the technology to do something new. I would start with building the scrolling system and see what dropped out. This game was designed almost overnight as I walked home. I wrote down all the ideas I wanted to incorporate on one sheet of paper and all of those ideas went in. One came out again at the last minute, as it had a difficult-to-use firing system. Just as well, really!

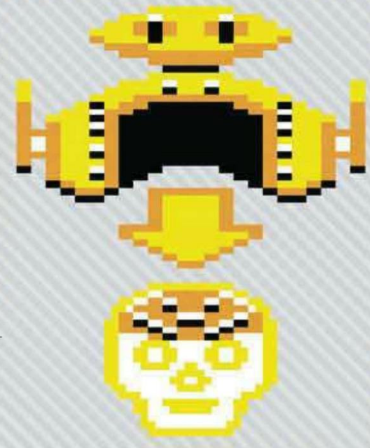
RG: Where did *Paradroid*'s droid-swapping originate?
AB: I think the idea germinated from an arcade game we used to play where you played a commando who could leap into a tank and use it. When it got hit you had a couple of seconds to leap out before it blew up, and then you could go and find another tank. I quite liked the two different states and that you were protected by the tank. Having decided on the radar-style display for the robots, I could save all the complex graphical images for all the directions of movement. It also allowed a greater variety of weapons, though it wasn't expressed fully until *Paradroid 90*. I understand that a number of games have used a similar system since, so it must be quite appealing.

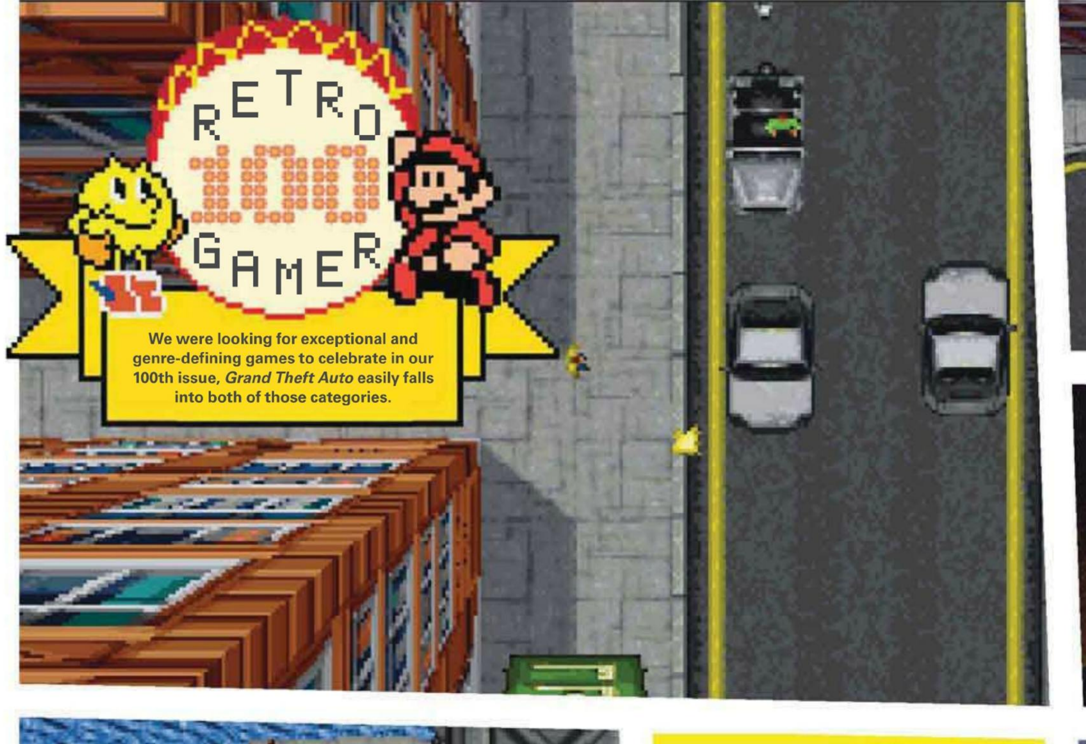
RG: What was the reasoning behind *Heavy Metal Paradroid*?
AB: I was writing *Morpheus* and had a 'curved metal' graphical look that I had concocted in a graphics editor. It was early days for the game and I didn't have a game system to experiment with, so I decided to substitute the *Paradroid* background graphics with the *Morpheus* ones. I had taken delivery of a Commodore 128, and one of the features was that you could switch the CPU into double-speed mode while the raster was off the screen, which bought about 30 per cent more processing time. So I wanted to get *Paradroid*'s scrolling a bit smoother. It turned out that I could get it running smoother even on a Commodore 64 and I really liked the new graphical look, so we did a new turbo loader and re-released *Paradroid*.

RG: What was it like working with Dominic Robinson on *Paradroid*'s sequel?
AB: Dominic was busy writing a game operating system for the Atari ST with a view to being able to run the same game almost unchanged on the Amiga, which was seen as the safest – but more unpopular – way of producing a game on both platforms. He was writing his own game, *Simulcra*, and we both used the operating system that he had written. If I had a tricky routine that I needed then Dominic would be able to write it. Everything worked pretty smoothly. I helped him out with some game algorithms too.

RG: Why do you think *Paradroid* remains so popular with gamers?
AB: I guess that everyone gets something different from a game. Maybe that's it. *Paradroid* is a very dynamic game; even though each ship is set up broadly the same, it is running everything on each deck as you arrive so it plays differently every time. As a player, you also have a great deal of freedom as to how to tackle the ship as a whole and each deck individually.

Special thanks to Andrew for his invaluable time.



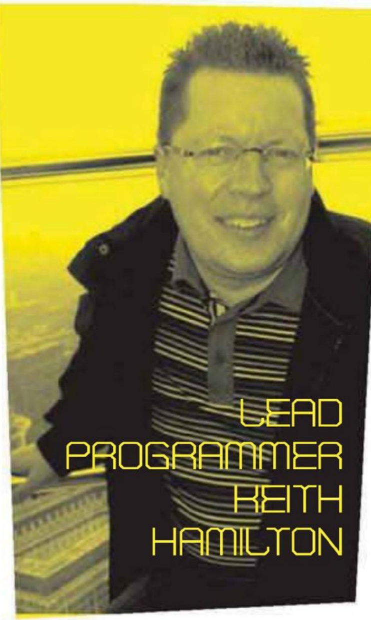


We were looking for exceptional and genre-defining games to celebrate in our 100th issue, *Grand Theft Auto* easily falls into both of those categories.





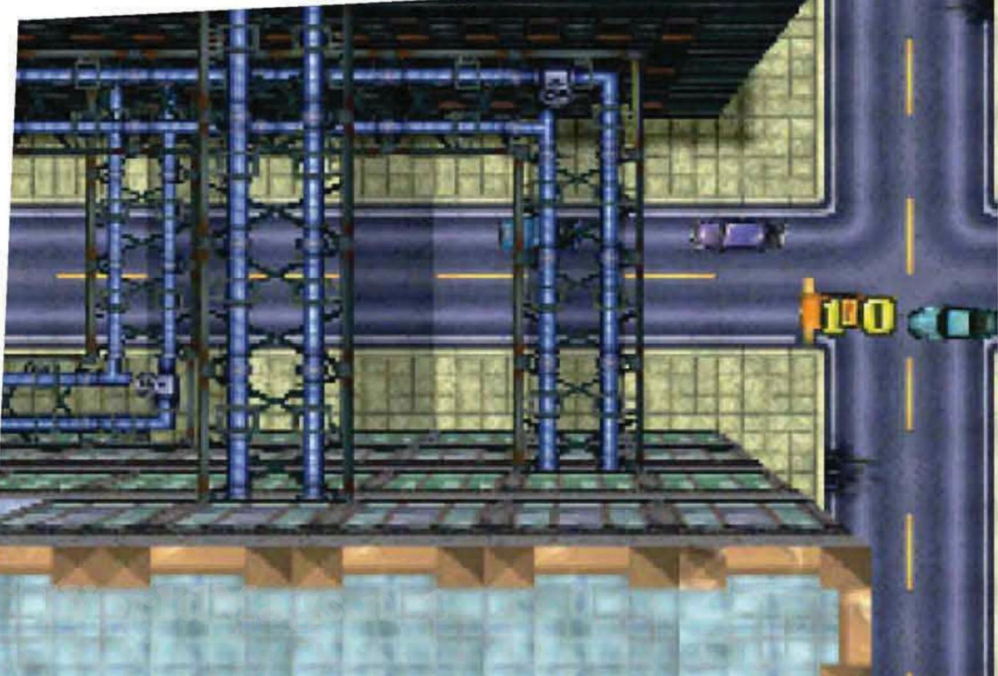




LEAD PROGRAMMER KEITH HAMILTON







Grand Theft Auto

Grand Theft Auto, inevitably branded an "evil game" by the Daily Mail, needs little introduction. But, as David Crookes discovers, what has grown into one of Britain's greatest gaming exports was never initially intended to shock

It was 1997. The UK was on a high. The general election that year had brought about the end of a Conservative government and the beginning of what was said to be a new era. British music was thriving to the point that a fresh movement – Britpop – had been created, with the UK even winning the Eurovision Song Contest. JK Rowling released the first of her *Harry Potter* novels, *The Philosopher's Stone*. The phrase 'Cool Britannia' may have become rather tiresome, with *The Economist* saying the following year that the public had grown sick of it, but it sure encapsulated the mood of the time.

Gaming formed part of this British creative wave. *WipEout* was enthralling clubgoers, boys were lusting after Lara and, fresh from releasing the classic *Lemmings*, DMA Design was sensing a change in the way games were being perceived. Dave Jones, DMA's co-founder, felt gaming should tap into the wider world of entertainment. He wanted people with an interest in film, music, books and a broader sense of popular culture to play. More than that, DMA wanted people to forget that they were playing a game and immerse themselves into an environment instead.

The DMA team cracked on with a city simulator. Programmer Mike Dailly produced a prototype on his 486 PC, working with an isometric viewpoint and all of the action on foot due to issues getting vehicles around the city. But when it came to actually playing this early prototype, it was deemed too slow. It didn't help that *Syndicate Wars* looked similar, so Mike went back to the drawing board and created a second prototype, this time from a side-on perspective.

A short while later, Mike spoke to John Whyte, the lead programmer of *Body Harvest* for the N64. Whyte had wanted to create a top-down racer but Jones wasn't interested, yet it got Mike thinking. Adding a floor to his side-on demo, he turned his second prototype from a side-on view to a top-down perspective. Then, using the first prototype as a base, he built perspective points using cubes to produce a pseudo-3D effect. DMA's management team loved it, and the new game, entitled *Race'N'Chase*, was given the go-ahead.

In 1995, DMA drew up design documents for the title. Aiming "to produce a fun, addictive and fast multiplayer car racing and crashing game which uses a novel graphics method" and set in the present day, the developers had an idea for three cities, each with their own graphical style. The game was to be packed with missions. There were, the document detailed, to be pedestrians. Such bystanders could be run over by cars. Players could also get out of cars and steal others. And this would attract the attention of the police.

The initial meetings about the direction of the game were somewhat chaotic. "The only agreed direction was that we were basically writing a game that we would want to play ourselves," says lead programmer Keith Hamilton. "Everything had to be interactive. The player had to be able to drive any vehicle he could find. Nothing was to be off-limits. We wanted fun situations to present themselves just by all the elements coming together, not necessarily in ways that were specially designed."

About the only thing they could decide upon at this stage was that the top-down view was the best way forward, nixing suggestions of using full 3D from a very early stage. DMA wanted whatever game was made to be delivered over multiple platforms – the PlayStation, PC and, originally, the Saturn – and while it was theoretically possible to do 3D on the PC, the console versions simply wouldn't support it. "The choices were to more or less develop two different game engines, or focus on making the game as rich and deep and fun as we could on an engine that would run across all of the platforms," recalls writer Brian Baglow. "So we did that. I think it was the right decision."



Although design documents existed, much of the game was made up on the spur of the moment. "The game evolved," explains Mike. "It was a true 'team-designed' game." Each design decision therefore became an experiment. The 'eureka' moment came when the team

IN THE KNOW

- **» PUBLISHER:** BMG INTERACTIVE
- **» DEVELOPER:** DMA DESIGN
- **» RELEASED:** 1997
- **» PLATFORM:** PC, PLAYSTATION, GAME BOY COLOR
- **» GENRE:** ACTION-ADVENTURE

THE MAKING OF



» [PC] The phone boxes enabled the many missions to form a seamless part of the gameplay.

thought about the player leaving their own car and getting into a different one. They realised that, because the other car wasn't really the player's, they must be a criminal, and so the infamous *GTA* theme was born.

"We envisaged a straight cops-and-robbers driving game," recalls Brian. "But it went from that to a car-based crime sim and wild sandbox adventure. We initially had the player as a good guy, and it was a long way down the line before the decision to try playing as the criminal was made. And at that point, we could see that there was something in there. Something fun and unique."

As the months went by, DMA's new game, which changed its name to *Grand Theft Auto* mid-project, started to grow. A lot of fresh talent was hired to work on the game, resulting in a very young team.

Despite the inexperience, the ambition remained. The simulation aspects of the game continued to be important, especially for Keith, who felt it was crucial to create a city that the player could see in action and then enjoy interfering with. For this reason, police cars drove all the way from the police station to a crime, while ambulances motored from the hospital and contained little characters with stretchers to pick up bodies. "If you followed them, you could see that they actually went back to the hospital," says Keith. The team also planned to have teams of traffic light repairmen who would drive out and fix any traffic lights if you broke them. "We dropped that because it was getting a bit too anal and because players just ignored the traffic lights anyway."

The levels were designed by just three people: Stephen Banks took on San Andreas, Billy Thomson looked after Vice City, and Paul Farley was responsible for Liberty City. Paul had quit a degree in architecture and only envisaged being with DMA Design for six months while he figured out what he wanted to do with his life, and when he started on *GTA* it was little more than an ugly-looking and rather rough demo. Yet while it wasn't the game everyone on the team wanted to produce – "I think most of us would rather have been working on one of the sexier Nintendo first-party games," says Paul – those working on it soon recognised the game's potential.

"The actual level design was fairly straightforward in the most part," says Paul. "At the time I came on board there were some rough guidelines to the possibilities and limitations of the game engine. The head of art had already written down some core design considerations regarding the flow of space within the game. This helped communicate to the team some of the fundamental aims of the driving part of the game."

The team were big fans of top-down racers like *Super Sprint* and *Micro Machines*, and these games informed some of the vehicle-handling objectives. "Even from an early stage, we were looking at how to make the driving flow well and be as forgiving as possible – the geometry of the levels plays a huge part in enabling this," continues Paul. "I think we did a good job of both allowing the player space to express themselves and their driving skills, while providing contrasting spaces to support gameplay focused on pedestrian play. A real difficulty was the lack of diagonal road or sidewalk tiles. I know I struggled with some aspects of Liberty City because of that limitation."

The team was given a lot of freedom on the game's direction. Remarkably, only one person on the team had ever shipped a game before, but despite that, they were handed a huge amount of responsibility and ownership over the title and, says Paul, it helped them make clear and quick decisions. Each of the three level designers took one of the city maps each. "You can clearly see the different approaches coming through both the level design and missions across the three maps," explains Paul. And they had a laugh doing it. "Quite early on, the sense of humour in the team was becoming evident in the game. In keeping with this cheeky nature, it seemed natural to take real-life American cities as our inspiration and send them up a little. I'm sure there are kids that fly into New York for the first time and are more familiar with it as Liberty City. I hope they aren't disappointed; it's an amazing city but not quite like it's portrayed in-game."

The criminal aspects let the imagination of the team run riot. It was possible to mow down a line of Hare Krishnas to earn a 'Gouranga' bonus, for instance. "We could also use the pager and text to tell the players about things that didn't really happen, like with bomb shops and respray shops," adds Brian. "Some cars wouldn't remap, so the idea was going to be dropped. It was suggested giving the player a message saying the plates had been changed instead. Simple, fast and it worked."

Some ideas didn't make it, however. Vehicles, characters, missions and city locations all got cut along the way. "We wanted combine harvesters to mow down pedestrians. We never quite had time for it, so never had to consider the issue of

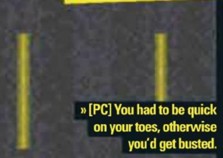


****ING READ THIS!

GRAND THEFT AUTO sparked a wave of controversy when it was released, and it seems that a penchant to shock ran deep within the team. David Cowan, the lead engineer at Visual Science, was amazed at the text files he received from DMA Design, upon which he was to base his work.

"The PC text files contained all of the mission information and strings that the user would see," he explains, "and they were originally absolutely filthy and full of profanity. I don't know if the PC version shipped with that, but the PSone version was very much sanitised for Sony at the time."

But how bad was it? "One of the lines was something like, 'Look, you stupid mother****er – get your ****ing ass over to the phone booth to get your next ****ing mission,'" he says.



» [PC] You had to be quick on your toes, otherwise you'd get busted.

CHASING CONTROVERSY

GRAND THEFT AUTO wasn't originally going to be an adult game. "The decision really came quite late in the day," recalls Paul. BMG Interactive hired Max Clifford to whip things up and it worked a treat. Not only did he deal with the fallout from the controversy, but he gained the game acres of column inches.

"I still feel quite bemused about it all, frankly," says Paul. "The game, while having some strong content, had a very obvious tongue-in-cheek sense of humour. This cheeky schoolboy humour combined with the cartoon top-down graphics really made it rather difficult to understand how the game could ever be seen as pushing the boundaries of taste and decency. It was very mild compared to content on TV, film, music and other entertainment media at the time. We knew we had created a great piece of art, an innovative and entertaining game that stood proud on its own merits. We didn't add the mature content to make it successful; it was core to the entire experience and helped it stand out from a crowd of competitors. We were the bad boys, and in a competitive market like videogames, sometimes it pays to be a little nasty."

whether that might have been taking things too far," says Keith. Cut-scenes, voiceovers and cinematic sequences were also axed, with the game having just one cut-scene per city for the main bad guys.

"We also ended up losing the original maps, which is a tragedy," continues Brian. "We had created full maps for each town and around the border of each were adverts for local businesses, vouchers and tourist destinations, all made up and in keeping with the style and feel of each city. It's one of the few things I never managed to get a copy of or find when the company became Rockstar North. In my imagination, they were awesome. In real-life… well, we may never know."

Other ideas were in the PC version but dropped for consoles due to hardware limitations. "Speaking for the PlayStation version, we had big problems with the trains mainly due to the way they were implemented on the PC. They used a lot of memory and were only used properly in a few missions, so we had to drop them. It was unfortunate, but we had to live with the realities of the situation," explains PSone programmer Russell Kay.

According to Paul, however, the team was fearless. It wasn't scared of failure and it was open to new ideas. Some of the team even wanted missions involving burning churches but, above all, they wanted to give the player a sense of right and wrong. "The player could choose not to act in a certain way if they didn't want to. If we had included missions where you were forced to single out certain groups of people to kill or abuse based on race or religion, that would have been a step too far, and it would have devalued the player's sense of choice to the detriment of the game and its subsequent success."

One of the problems that faced the team was how best to integrate the missions. The level designers were using fairly complex tools to create fun, challenging and exciting activities for the player, but it ran as a series of challenges that were fundamentally unconnected. The game essentially ran along the lines of 'go here, steal this car, drive to this point, leave it, get on a bike, take it to this point' and so on. So once the missions were in place, it was up to Brian to come up with the specifics of what exactly the player was doing and why.

> "We wanted combine harvesters to mow down pedestrians. That might have been taking it too far"

"This 'plot' or narrative had to be delivered," he explains. "There were no voiceovers, animation or cut-scenes featuring a rich variety of protagonists. Instead we had around 120 characters on a 'pager' at the top of the screen. This was years before Twitter too! Everything had to be scaled back and written for the maximum amount of information in the smallest amount of space."

But that wasn't the only problem he faced. "The missions could be played in pretty much any order within each city, so there was no real way of doing any sort of linear plot within a single city. Putting together little self-contained missions was a definite challenge. There was a lot of allusion and implied action taking place elsewhere, just to make the writing reflect the 'living, breathing city' thing that the whole game embodied."

The non-linear mission system came later in the game's development. At first, the game had players returning to a sub-menu to select their next mission, but the level designers felt this broke the immersive nature of the game and that the front end was too boring. Coming up with the idea of spawning missions from payphones, characters, vehicles and other in-game elements was groundbreaking at the time, effectively building the level selection into the game itself, and it made a huge difference to the player's suspension of disbelief. "I don't think the code team were initially very pleased at this because they had never designed the engine to run indefinitely," says Paul. "The new mission structure certainly created a number of new issues for them to solve, but I'm glad they did."

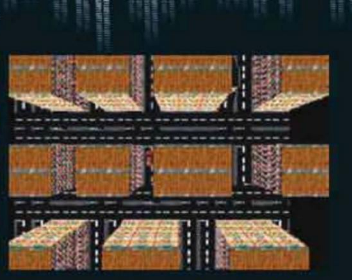
The key to this was the level-scripting system. The programmers invented a language that the level designer could use to set up the missions so that they would all be different. But although this brought great freshness to the game and the title was starting to come along at a cracking pace, with the 20-strong team working hard to perfect the gameplay, the whole project came close to cancellation on a few occasions. It was DMA's first game with a million-dollar budget and it was much bigger than anything the team had previously attempted, but when a group of high-ranking American executives from DMA's publisher, BMG Interactive, arrived,



» This early prototype of *Race'N'Chase* was produced by Mike Dailly. He explains: "After the initial code was implemented in the game, *Syndicate Wars* appeared in a magazine. It was a little too close for our liking. On top of this, Keith [Hamilton] was also having some problems with his version of the engine, since he had to rewrite it in C and the speed wasn't holding."



» [PC] The varied cityscape meant you could explore for hours.



» This second prototype was based on the first. Mike says: "Using 'cubes', I built an array of perspectives, then with a 3D array attached faces to each active cube. I then removed interior faces and rendered the resulting 'city'."

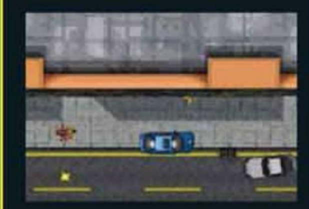
HITTING THE STREETS

THE *GTA* DEVELOPMENT team liked to muck in. They provided all of the game's voices, and there were also frequent rows. "The team was always arguing about something," laughs Paul. "There was a lot of positive friction on the team, but also some negative stuff from time to time." But it speaks volumes that many of them are still in touch with each other.

The sense of togetherness and fun meant they took risks, and this was evident early on. Usually a developer would put out a demo in order to attract the attention of a publisher. Not DMA Design. When it tried to get a publishing deal for *Grand Theft Auto*, it decided to shun the normal prototype material and get out on the streets of Dundee.

The team produced a live-action video, with a story of someone getting shot – played by lead programmer Keith Hamilton – and then a crazy car chase put together with some careful editing using a company car and an old banger that the team bought specially.

"There are shots of us driving along, hanging out the windows with guns and doing handbrake turns," says Keith. "This wasn't done on officially closed roads – just quiet industrial estates. Unfortunately, I don't have a copy, and I don't know if any copies still exist. I'd love to see one."



BUSTED!

it almost killed the game. "They came to the studio, bizarrely wearing shorts, and they really didn't 'get' the game, with its outdated visuals, loads of bugs, and no clear genre," remembers Keith. "Fortunately, Dave Jones worked his magic and we were given a stay of execution."

GTA was released before Christmas and didn't appear that special on the face of it. It was brought to the table at a time when gamers were becoming used to playing in 3D and some reviewers reported drab, lifeless visuals and awkward driving dynamics. This, however, told only half a story. Here was an expansive, mould-breaking, free-form game with a compelling plot that also allowed for freedom and exploration. It had driving, shooting, chases and theft. It had all of the basic elements that have made the series so incredibly popular.

> Grand Theft Auto was a chance to run wild as the game car-jacked your mind and drove away with it

And while the missions lent purpose, the audio brought the city to life with its seven radio stations and police band track that boomed from car stereos and encouraged players to try different vehicles to see which tunes they got. There was a great sense that you were a criminal let loose on a metropolis, and you were not only up against other villains but the police too. It was a chance to run wild as the game car-jacked your mind and drove away with it.

A PlayStation version was essential, and it was created by Visual Science. Russell Kay had been the head PC programmer at DMA Design but left to form the new firm, which was located a short walk away. Visual Science worked with Psygnosis on several projects and so gained PlayStation experience, and when DMA realised that it couldn't deliver the PlayStation version in time, it called on Visual Science to assist.

The team consisted of four people, plus two programmers from DMA for a couple of months to help with some of the missions. They created a very rough port to the PlayStation devkit, which had much more memory than a retail machine. This allowed them to see it all working, albeit very slowly – less than a frame per second. "We then profiled the code to see where the slowdown was, and it was pretty much where we expected it to be: the rendering and the AI code," says Russell. "Over the next few months we optimised those areas while refining the control scheme. We had to completely rewrite the front end for the system, as the control mechanism and Sony's Technical Requirements Checklist were so different. It took quite a while to get right. We spent around eight months on the conversion overall."

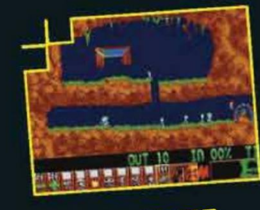
The biggest problem was taking the PC version, which used around 16MB of RAM, and squeezing it into 2MB on the PlayStation. "The other challenge was the audio," admits Russell. "The rich PC audio had to be squeezed into the minuscule RAM of the PlayStation. We used CD audio for the radio stations and made all of the other sound effects and police chatter as standard audio."

David Cowan was the lead engineer on the port. "I remember nothing on the PC version being documented very well. Most of the docs were very out of date, so the only references we had were the code and assets themselves," he says. "We didn't have access to the original assets either because they were spread all over the DMA network and no one knew how to bring them all together, so we ended up writing a tool that read in the finalised PC retail packages and converted them back to individual sprites, sounds, levels and so on so we could convert them."

David remembers the code for the pedestrian system being horrendous, and he had to significantly modify it so that it wouldn't store the state of every pedestrian and car in the game. On the PlayStation, the state of each of these things was cached only for a short time and was randomly generated within 20 or 30 metres of the edge of the screen, which quartered the memory requirement. "Dead bodies disappeared after 30 seconds or so, and vehicles were randomly generated as you were driving or walking around. Skid marks on the PC version were also stored indefinitely but 'evaporated' on the PSone," says David.

GTA went down a storm on release, and it caused an inevitable wave of controversy. Politicians began to debate the game and there were calls for it to be banned. There was talk of videogame censorship. But Brian says the team didn't realise how contentious it would be.

"I think some of the team were a little shocked by the tabloid response, questions in Parliament and getting the game on *Question Time*," he says. "But once everyone realised that this was just the way the media works, they all settled down a bit and started to enjoy it. After all, we'd made a game that gamers, critics and the people actually playing the game all thought was pretty bloody good. The controversy and hysteria was nothing compared to the satisfaction of having made a game that I think everyone involved can be justifiably proud of."



DEVELOPER HIGHLIGHTS

LEMMINGS (PICTURED)
SYSTEM: AMIGA, PC, ST, SPECTRUM, AMSTRAD, LYNX
YEAR: 1991

GRAND THEFT AUTO: LONDON, 1969
SYSTEM: PC, PSONE
YEAR: 1999

GRAND THEFT AUTO 2
SYSTEM: PC, PSONE, DREAMCAST, GAME BOY COLOR
YEAR: 1999

GRAND THEFT AUTO III
SYSTEM: PS2, XBOX, PC
YEAR: 2001

RETRO GAMER

GTA'S ROADMAP TO SUCCE$S



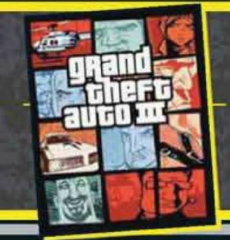
GTA: LONDON 1969
Year Released: 1999

After parodying New York, DMA Design turned its attention closer to home with London, and this time it visited the actual city. The end result is a game rife with cultural references that pay homage to everyone from the Kray twins to Sid Vicious and the Sex Pistols and James Bond. It featured over 30 new missions and introduced an additional 30 vehicles. Another mission pack, *Grand Theft Auto: London 1961*, was released two months later.



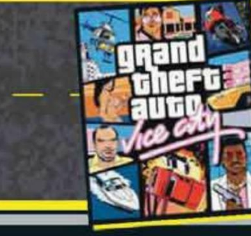
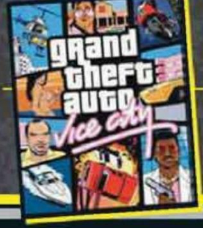
GTA 2
Year Released: 1999

DMA's sequel was business as usual, although it did introduce a number of new mechanics. The biggest difference was that you could now do missions for separate gangs, affecting your relationship with others, while the saving system was greatly improved, allowing you to save the game whenever you entered a church. The side missions that would become a staple were also introduced, letting the player take on jobs like a taxi or bus driver.



GTA III
Year Released: 2001

DMA Design returned to Liberty City for its first 3D *Grand Theft Auto*. The results were spectacular, further expanding the sandbox approach that had been hinted at in earlier games, while the likeable characters and well-plotted story gave it an epic scope that past titles simply couldn't match. You could argue that it was simply a better version of DMA's earlier *Body Harvest*, but *GTA III* was on a far larger scale, and all the more impressive for it.

GTA: VICE CITY
Year Released: 2002

In its new Rockstar North guise, the former DMA followed up its 2001 hit with the excellent *Vice City*. Set in a pastiche of Eighties Miami, it's a marvellous game and amazingly nostalgic due to the many film and cultural references packed into it. It's also loaded with recognisable voice talent, including Ray Liotta, Robert Davi, Danny Trejo, Tom Sizemore and Dennis Hopper. *Grand Theft Auto: Vice City* is one of our favourite games in the entire franchise.



GTA ADVANCE
Year Released: 2004

GTA Advance was an attempt to cram the winning formula into a handheld. Sadly, it was a pretty disappointing effort that wasn't able to re-create the same magic that made the original games so enjoyable to play. Created by Digital Eclipse, making it the first *GTA* game not handled by Rockstar, its events take place a year before those of *GTA III*. While it once again takes place in Liberty City, many of the locations for popular secrets have been changed.

GTA: SAN ANDREAS
Year Released: 2004

Everything about *San Andreas* is epic. It's huge, featuring parodies of San Francisco, Las Vegas and Los Angeles. It has a great plot and enjoyable characters. The voice cast is also brilliant, with turns from Samuel L Jackson, Ice T, James Woods and Peter Fonda. It's the scale that most impresses, though, with clever RPG mechanics, numerous new activities, burglary, car modification and huge gang wars all adding to the appeal. Quite easily *GTA*'s finest hour.

LIBERTY CITY STORIES
Year Released: 2005

Another *GTA* game set in Liberty City. Released for the PSP and later ported to the PS2, it's another prequel to *Grand Theft Auto III*, but feels cut down after the epic scope of *San Andreas*. While it's now possible to ride a motorcycle, your character can't swim or climb. It's a lot smaller than *San Andreas* as well. It's still an enjoyable addition to the franchise and far better structured than *GTA Advance*, but it doesn't feel like it's bringing anything new to the series.

VICE CITY STORIES
Year Released: 2006

Vice City Stories is a similar retread for the PSP and is another prequel story. It's a far better game, though, thanks to a more interesting lead character, a better story and several new gameplay mechanics. The most interesting is empire building, which is a combination of *Vice City*'s properties and *San Andreas*' gang war systems. The multiplayer features additional modes, while load times are generally faster than its predecessor.



GTA IV
Year Released: 2008

We were disappointed with *Grand Theft Auto IV*. Yes, it featured a strong story and interesting characters, but it felt lacking somehow – especially after *San Andreas* – as if the technology wasn't completely ready for Rockstar's vision. Fortunately, things picked up significantly with two digital add-ons, *The Lost And Damned* and *The Ballad Of Gay Tony* (later released together as *Episodes From Liberty City*), which added a lot of fun elements that hadn't made it into the original.



GTA: CHINATOWN WARS
Year Released: 2009

First released on Nintendo's DS and developed by Rockstar Leeds, *Chinatown Wars* remains the best handheld *GTA*. Sporting a new viewpoint, crisp visuals and great use of the DS's touch screen, it's a fantastic game that implements many of the mechanics of *Grand Theft Auto IV*. By far the best part of the game, though, is its drug-dealing mini-game, which allows for an insane amount of strategy as you go about, dealing to the scum of the city.





GTA V
Year Released: 2012

Little has been revealed about the next *GTA*, other than a trailer that was revealed in November 2011. Numerous rumours point to a 2012 release, but so far nothing has been confirmed. All we know is that the series is returning to Los Santos and that Rockstar is promising "the largest and the most ambitious game Rockstar has yet created", and a "radical reinvention of the *Grand Theft Auto* universe". If anyone can pull that off, Rockstar can.

THE CLASSIC GAME



"*Elite* kick-started my career so it meant **a huge amount to me at the time, but it was also a great time anyway.** Both Ian and I really got into the challenge, and the fact that we were writing it between college work – both of us were at Jesus College, Cambridge – made it especially enjoyable and not at all a grind. The excitement of doing something we knew hadn't been done before was fantastic, and we became quite selective about who we showed it to in case they did it too. I have always looked back on that time with huge fondness, as we were very lucky to be part of this industry at the very start."

David Braben

David Braben



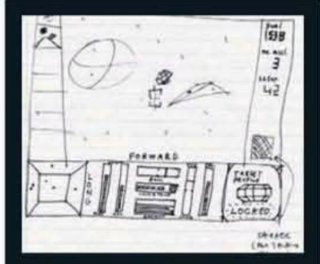
A Cambridge University student, Braben juggled his natural sciences degree with programming, finishing the game pre-graduation – a major achievement all round.

Acornsoft

ACORNSOFT

"Thorn EMI wanted a score, three lives, and a play time of 'around ten minutes a go'. Thankfully we went with Acornsoft instead," says David.

Ian Bell



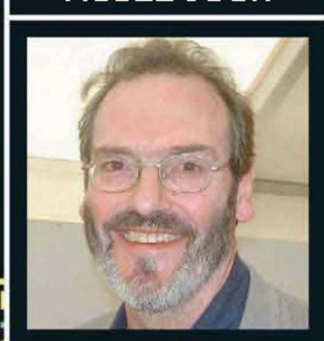
As a fellow Cambridge student, Bell coded around studying mathematics. Both he and Braben firmly believed in proving that 3D was possible. Here is one of Bell's sketches.

Thorn EMI



"The best part of the wider story, with hindsight at least, was that Thorn EMI turned down the game as it was 'too different'," says David.

Robert Holdstock



The author of the novella, *The Dark Wheel*, that was included with *Elite*. He saw it as a good chance to get back into sci-fi writing and recalled how fast the game was.

Sci-fi



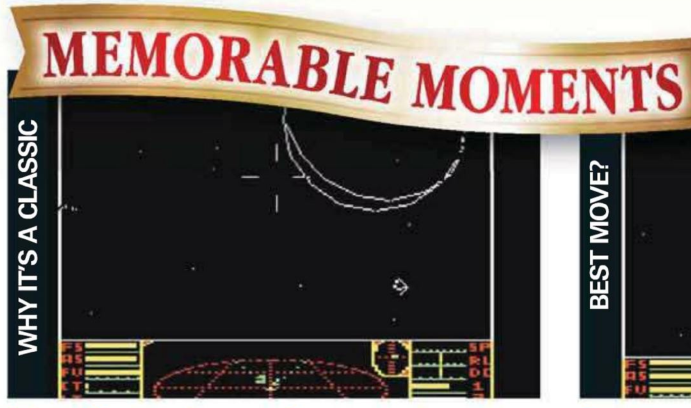
Braben and Bell loved science fiction, and *Elite* was very much influenced by the *Traveller* RPG as well as *The Hitchhiker's Guide To The Galaxy*, *2001: A Space Odyssey* and, of course, *Star Wars*.

ELITE

MEMORABLE MOMENTS

In a change from our usual Classic Game formula, we've persuaded David Braben to personally dissect every aspect of his classic 8-bit hit *Elite*.

WHY IT'S A CLASSIC



It's still an epic experience

Elite was groundbreaking. In taking gaming into the third dimension, David Braben and Ian Bell created a truly compelling masterpiece. Despite taking up just 22K of code, it reached into the minds of players, allowed their imaginations to run riot and inspired many games that resonate today; not for nothing did the producer of *Grand Theft Auto* dub it "*Elite* in the city". For all of that, David remains rather modest: "It's not really for me to say why *Elite* is a classic game! I suppose it has stood the test of time and is still fondly remembered, including by me, all these years later."

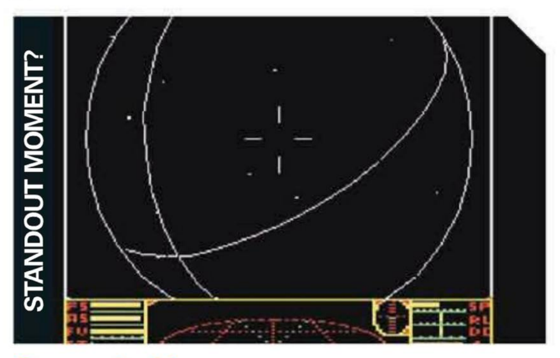
BEST MOVE?



Prepare to fire

With *Elite*, it was possible to do all manner of cool things, spending hours flying around in space, exploring the universe and all of its fascinations. "But there's not really a move in the *Tekken* sense," says David. "It is satisfying firing a missile at point blank into a ship, though, by flying straight at it and launching the missile at the last moment. That way it doesn't get ECMed [electronic counter-measures, which causes all primed missiles in range to auto-detonate] too. If you aim slightly above it, then you don't slam into any barrels that are launched into the debris."

STANDOUT MOMENT?



Space docking

As you fly from planet to planet and trade in goods, steal and try to bat away pirates, you soon realise that there is no particular aim with *Elite* other than trying to achieve the top rank. And yet that doesn't mean there aren't any standout moments, some of them just borne out of simple exhaustion and the need to get some rest, as David explains: "The standout moment for me is probably the relief when you dock at an 'anarchy' after a tricky, sweaty-palms journey, and you finally get to save. It felt like a real achievement."

MOST MEANINGFUL PART?



Wow! 3D!

There is no doubting that *Elite* was a masterpiece of programming. The open-ended nature and the wireframe graphics ensured its place in the heart of everyone who played it, and made it a reference point for many developers since. It is difficult not to admire the advanced game engine and all of its nuances and complexity. Those spaceships certainly stick in David's mind. "The 3D spaceships, especially the Cobra, mean a lot to me. A lot of love went into them, but also, it is what everyone remembers about the game. I suppose the way the worlds were generated makes it very meaningful too."

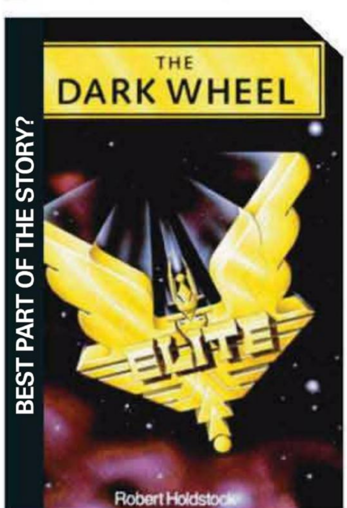
BEST SHIP ENHANCEMENT?



Galactic Hyperspace!

Braben's choice of ship enhancement is very clear. "Galactic Hyperspace! It was best in the sense it took about six bytes to implement, including the text for the name. It took quite a time to make room for six extra bytes," he says. Certainly, though, there were many ways to enhance a ship, usually coming as pods. Fuel pods, salvage pods… They all combined to make your craft better able to combat the enemy in missions and achieve your aim as the best navigator in the whole damn universe. Without them, you'd be stardust for sure.

BEST PART OF THE STORY?



What? No asteroids?

"Probably the best part of the in-game story was why the first few thousand copies of the game didn't have very many asteroids," says David. "It was all because of the novella by the excellent but now sadly deceased Rob Holdstock. He included a mention of people called 'rock hermits' – people who lived on asteroids, mining them. We also put in a few other rare events, but these were really hard to test, so we temporarily turned the asteroid creation rate right down to test these other features. Due to an almighty mess-up, it was the version with few asteroids that went to duplication."



IN THE KNOW

- **PLATFORM:** BBC MICRO, ACORN ELECTRON, VARIOUS PORTS
- **PUBLISHER:** ACORNSOFT
- **DEVELOPER:** DAVID BRABEN AND IAN BELL
- **RELEASED:** 1984
- **GENRE:** SPACE TRADING

What the press said… ages ago



Beebug, Volume 3, Issue 6

"Thoughts of an over-hyped third-rate nightmare started to loom close as, with a degree of trepidation, I loaded *Elite*. That was just over a week ago, and I'm now convinced that Acornsoft have just released the best game ever for the Beeb."

What we think

Elite inspired a host of programmers, and many of the greatest developers forged a career in gaming because of it. Although it influenced British programming more than the rest of the world, it showed the potential of gaming, made the BBC Micro a viable gaming platform and became the definitive Classic Game.

CRASH&B

1982
2 Billion

1981
1 Billion

1980
415 Million

1979
80 Million

1977
40 Million

Atari Inc Profits

1983
– 539 Million



Everyone knows about the videogame crash, but not everyone knows how it actually happened. This fascinating article sets the record straight.

LONG A MYSTERY TO EUROPEAN READERS OF RETRO GAMER, AND STILL HOTLY DEBATED AS TO ITS SCOPE AND CONTENT BY THOSE IN THE US, MARTY GOLDBERG AIMS TO CLEAR UP THE EVENTS SURROUNDING THE US VIDEOGAME INDUSTRY CRASH OF 1982-1984.

While gaming in Europe had found its market foothold on the personal computer platform early on thanks to the likes of Sinclair, Acorn and Commodore, when the first signs of the crash began appearing, consoles largely dominated the US consumer market. Most people in the US received their home gaming fix on consoles like the industry-leading Atari 2600. In fact, at the time of the beginnings of the crash, Atari Inc had 80 per cent of the home market. Atari, in effect, *was* the home market. Mattel was a distant second with 15 per cent, and Magnavox had 3-4 per cent with its Odyssey 2.

Atari itself, and its parent Warner Communications, had been fuelled by explosive growth over 1980 and 1981 in its coin and consumer divisions. Its coin-op division – the "other half" of the company – had been at the forefront of the golden age of coin-op games, and that started in 1979.

The age had begun thanks to competitor Midway's release in late 1978 of the Taito-licensed game *Space Invaders*, which surged in popularity throughout early 1979. Followed up with *Space Invaders Deluxe* and then the Namco-licensed *Galaxian* later that year, Midway reported almost tripled coin-op sales from $21.5 million in 1978 to $60.8 million in 1979. Atari was able to join in with hits like *Asteroids* and its classic trackball-driven *Atari Football*, and the coin-op market rush was on. A plethora of other manufacturers dove into the industry, looking to get in on the action. Where there had been around 95 new coin-op games in 1978, that jumped to 150 in 1979 and 230 in 1980. In a market explosion on a scale likely never to be seen again, arcade games started popping up everywhere as non-traditional operators and locations expanded the market. Doctors' offices, gas stations and even department stores started adding arcade games to their lobbies and walkways.

Then, in 1980, Atari's consumer division, largely struggling with a languishing 2600 console and a just-released set of home computers that had to compete with Apple, hit gold itself. The home videogame market had been going through a tough time at the end of the Seventies thanks to handheld electronic games. The small devices, manufactured

"With both divisions doing well, Atari jumped from $80 million in sales in 1979 to $415 million in 1980"

by the likes of Mattel and Coleco, were chiefly driven by LED-based calculator technology. Jumping from $21 million in sales in 1977 to $375 million in 1979, they dominated sales in toy stores and other retailers. Demand for these devices rose even more in 1979 due to a chip shortage.

That all changed in 1980 because of several factors: manufacturers overproduced product that year and released more advanced versions that became too complicated for kids, and a smartly licensed *Space Invaders* was released for the 2600. The release of this port quickly positioned the 2600 as the must-have console on which to play this arcade favourite, gaining ground against competitors like Mattel's Intellivision and Magnavox's Odyssey 2. It also helped kill off the handheld electronic games market. Home videogames were the new king.

The momentum only increased as more arcade hits, including Atari's own arcade games, were ported to the console, and third-party companies like Activision began releasing titles that showed more of what the hardware could do while vastly expanding its library of available games. Thanks to the one-two punch of its arcade and consumer divisions doing well, Atari jumped from $80 million in sales in 1979 to $415 million in 1980.

With videogames in the public consciousness, the expansion wasn't limited to Atari. The US was gripped in the midst of videogame fever through iconic titles like *Pac-Man* and *Donkey Kong*. It seemed they were influencing everything from general pop culture to more traditional consumer markets, as everyone wanted a piece of the action. Even American politics was influenced, as the term 'Atari Democrats' was coined to describe the new, younger members of Congress, more conscious of the tech industry.

Wall Street was paying attention, intently watching the proceedings as more companies joined the industry and share prices soared. Warner Communications alone shot up 50 per cent in its earnings across 1981 on the strength of its Atari Inc subsidiary, which had sales of about $1 billion. Mattel also reported record earnings thanks to strong



FROM THE FRONTLINES

Howard Scott Warshaw (former Atari Inc employee and author of the Atari 2600's *Yars' Revenge, Raiders Of The Lost Ark* and *E.T.*)



"I didn't get that it was happening for a while because I was in such denial, not wanting my gravy train rained on. We didn't think it would crash the way it did, but when it did nobody was really that surprised. Atari, for years, was using leverage that they had to screw distributors everywhere, forcing them to buy copies of old non-selling games just to get copies of the new game. The industry had gone from $2 billion a year to nothing in a year and a half. But I never thought for a second it would stay dead; it was too amazing a phenomenon to simply go away. Interactive media is too powerful to disappear; it just needed a dramatic update to its business model."





ATARI INTRODUCES THE 5200 SUPERSYSTEM.

Intellivision orders for that year, and most of the industry was following suit. Over 2 million families in the US had bought home videogame systems, and the demand was growing exponentially. 1982 was predicted to have even more explosive growth, with an estimated 3 million new buyers added to the tally. Thomas Kully, a toy industry analyst from William Blair & Company, summed it up in the *Star News* in December 1981 with: "Video is hot. It's taking sales from not only the portable electronic games, but may also be making board games rather mundane these days."

IT BEGAN IN COIN

The first of the signs that the industry's leading company, Atari Inc, might not be able to keep up with the growth was actually the downturn in the coin-op market. Unknown now to most videogame fans who view the business in its entirety, the coin-op market was different from the consumer market. In coin, the operator is the end market and not the player, as they're the ones actually buying the machine. The more traditional coin-op market consisted of distributors and operators of locations like bars, bowling alleys and arcades, where the machines would be placed. The coin industry, with its roots in electro-mechanical and pinball machines, was set up to support the cycles of these buyers. The anomaly that the previously mentioned non-traditional operators added to the picture introduced amazing growth, but growth that was unsustainable, especially when the local doctor's office realised that it would need to buy or rent a new coin-op every few months after the lure of the current game died down. It didn't help that the coin industry was oversaturated with competitors, all promising the next big hit and great earnings for the operator. So the coin industry began a downward cycle in 1981 that continued into 1983, just as the consumer market's crash was picking up steam. The end result was that many coin companies either went out of business or merged, creating room for the Japanese developers and manufacturers to enter the market where previously they had to license their games to more established US manufacturers and distributors. It was a foreshadowing of the Japanese dominance to come.

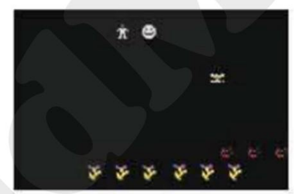
CONSUMER SHELL GAME

In 1982, driven to keep up the explosive growth by both its own management and Warner's, as well as stockholders, Atari forced retailers to make bulk orders of games for the year in order to pump up sales projections. Not that they needed the push. Retailers were treating the small game cartridges like little gold bars, eager to take on extra shipments whenever possible. That was the problem, however. By 1982, the US market had the Atari 2600, Intellivision, Odyssey 2, Fairchild Channel F, Bally Astrocade, and



Atari's massive booth at the January 1982 Consumer Electronics Show in Chicago. While the bottom showed off the 2600's older hot titles and brand new ones, the top was a maze of cubicles set up to conduct business with distributors and other partners. Atari was carrying on business as usual, even though warehouses were piling up with unsold inventory.

SIX OF THE WORST



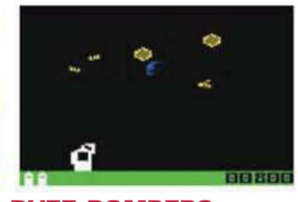
FIRE FLY
Publisher: **Mythicon**
Year released: **1983**
System: **Atari 2600**

A space pilot testing a high-speed craft on the edge of a black hole. At least that's what the blinking thing on a straight black screen is meant to represent. Why he's being attacked by demons, bats and more with a grating background noise is anyone's guess.



ARTILLERY DUEL
Publisher: **Xonox**
Year released: **1983**
System: **Atari 2600**

Released when the 2600 was being pushed to produce more detailed and colourful graphics, there's no excuse for this. You've played it a million times before: two cannons try to get the right trajectory to blast the other. 1977 called; it wants its launch title back.



BUZZ BOMBERS
Publisher: **Mattel**
Year released: **1983**
System: **Intellivision**

A half-hearted attempt at a *Centipede*-style shooter, all done to an annoying rendition of *Flight Of The Bumble Bee*. With bees, hummingbirds and a giant can of bug spray, you have to wonder whether Mattel was inhaling the fumes of an actual aerosol can.



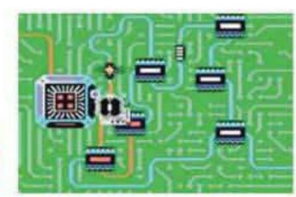
NIGHTMARE
Publisher: **Magnavox**
Year released: **1983**
System: **Odyssey 2**

This makes Atari's moving eyeballs through a dark room in *Haunted House* seem advanced. A square room with a hole at the top. Get to the hole. Avoid blobs moving around the empty room. Sure to provide five minutes of fun for the whole family.



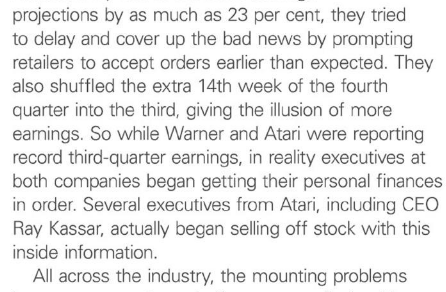
JAMES BOND 007
Publisher: **Parker Bros**
Year released: **1984**
System: **Atari 5200**

It's hard to see how this game would launch the line of games that would eventually lead to *GoldenEye 007*. This 5200 port of the first *Bond* game is pure garbage. You control Bond in his Lotus Esprit as he proceeds to rip off *Moon Patrol* with lazily coded 5200 graphics.



2010: THE GRAPHIC ACTION GAME
Publisher: **Coleco**
Year released: **1984**
System: **Colecovision**

What should have been a promising sci-fi game was a poorly executed puzzler. Solve multiple puzzles in an effort to repair your ship. That's it. No enemies, no frantic gameplay, no market. Great graphics weren't enough.



"Grumbles about a bubble waiting to burst became shouts. How could this be sustainable during a major recession?"

more on the way that year including the Atari 5200, Emerson Arcadia, Vectrex and ColecoVision. All came with their own game library, and most with a slew of third-party games and extra peripherals that also flooded the market. Consumers were getting bombarded with choices, and retailers, including many that had never carried videogames before, were simply feeding the frenzy. In effect, the situation was mirroring what the coin-op industry had gone through.

The grumbles from Wall Street about a bubble waiting to burst now became loud chants. How could this explosive growth be sustainable, especially during a major recession? Was this much competition healthy? Would many companies and stockholders lose their shirts in this modern-day gold rush? And would consumers get overwhelmed if not tired of this bombardment of high-tech entertainment, relegating it to a passing fad like the Pet Rock of the Seventies?

According to Connie Bruck's book *Master Of The Game*, Gordon Crawford, who as a member of the investment firm Capitol Group was responsible for bringing Atari and Warner together, stated: "At the January [1982] Consumer Electronics Show, there were three or four new video hardware systems and about 50 new software systems – all the warning lights went on for me. Then, at the June CES show, it was worse! There were about 200 new software systems. This was a business that the year before had essentially been a monopoly, and now there were hundreds of new entrants. By this time, Warner was almost a game stock."

The illusion was that it was nothing but blue skies for 1982 and onward. Atari spent big money on multiple blockbuster releases for the Atari 2600 release through the year, starting that March with the eagerly anticipated *Pac-Man* home conversion of the extremely popular arcade game. That was followed by the movie licences of *Raiders Of The Lost Ark* and *E.T. The Extra-Terrestrial* by year's end, the latter of which was forced on Atari by Warner in an attempt to lure Steven Spielberg away from Universal Studios to make movies for Warner Bros. And while Atari, Coleco and GCE were introducing their next-gen systems that summer, Mattel and Magnavox also released voice synthesis modules for their consoles, hoping to show a perceived technological advantage over Atari's ageing workhorse.

Activision had reported its game sales jumping from $5 million to $50 million in the span of a single year. Looking to tap into this lucrative 2600 third-party games market, earlier that year Mattel had also launched its attempt to gain more market share by porting versions of its own games to the Atari 2600. Coleco followed, joining more than a dozen companies already making games for the 2600. All with no input or quality control from Atari. All told, over 30 companies were making consoles and game cartridges for the market, with more looking to grab a share in the 65 million cartridges projected to be purchased that year.

Representing only 15-18 per cent of all American households, none of these manufacturers and developers ever considered the market to be anywhere near saturation.

The reality, however, was that problems started behind the scenes throughout the year. At Atari, while initial sales of *Pac-Man* were strong, they fizzled by summer after consumers found the differences from the arcade version and the distracting flickering of objects on screen to be too much. *Raiders Of The Lost Ark* and *E.T.* would prove more of the same in 1983, but in summer 1982 it was *Pac-Man* that was joining other Atari games piling up in warehouses across the US. Flush with back stock from overproduction and cancelled retailer orders, the overcrowded market was taking its toll. However, Warner and Atari executives swept the fact under the rug, refusing to acknowledge that there was a problem. When it was taken into account that each warehouse contained hundreds of thousands of games just sitting there, the signs of oncoming disaster were apparent. By the time that executives realised they had to cut back earnings projections by as much as 23 per cent, they tried to delay and cover up the bad news by prompting retailers to accept orders earlier than expected. They also shuffled the extra 14th week of the fourth quarter into the third, giving the illusion of more earnings. So while Warner and Atari were reporting record third-quarter earnings, in reality executives at both companies began getting their personal finances in order. Several executives from Atari, including CEO Ray Kassar, actually began selling off stock with this inside information.

All across the industry, the mounting problems became apparent, as shelf space was flush with stock being passed over by confused consumers. There were simply too many choices, both in platforms and in games for those platforms. Some retailers had actually already been warning about the situation in early 1982 at the New York Toy Fair, the traditional annual show for the toy industry. Said one buyer from a toy store chain, according to a February 1982 edition of the *Chicago Tribune*: "You take a fairly bright couple in their early 20s who invest $200 in a console and $30 apiece in four or five game cartridges, all of which do basically the same thing – eventually they're going to get tired of it. It would be pretty hard to convince that couple to spend yet another $30 on another cartridge just so they'll have something different to shoot at."

The truth finally caught up with Atari and the industry by 8 December 1982. After originally announcing strong projected sales for the fourth quarter and for all of 1982, both Warner and Atari dropped a bomb: earnings for the fourth quarter and the year itself would be far lower than expected. In conjunction with this, Perry Odak, head of the home videogame division of Atari, was fired. The company with 80 per cent of the market had just said it wasn't doing well, and that it had let go the head of its largest-earning division. The result sent shockwaves through the stock market as people rushed to sell shares in any and all videogame companies. Warner stock value was cut in half. Mattel shares alone lost $2.12 in a single day after the announcement, and were further hit after it then itself reported poor fourth-quarter sales. Coleco's share price dropped $3.25, and others were hit equally hard throughout December 1982. Even retailers weren't exempt, as Toys R Us,



Nintendo's ROB was front and centre in its introduction of the NES at the Summer 1985 Consumer Electronics Show in Las Vegas. The billing as an entertainment machine was key in getting it back into stores for a limited test market later that year.



Sega had a presence in the pre-crash market but was able to emerge in a stronger position, acting as the primary competition for Nintendo's domination of the console market.

which had reported strong holiday sales, was hit with a $4.50 loss. It was official: the bubble had burst and the crash had arrived.

CRITICAL MASS

Atari tried to dance around its losses by laying off 1,700 workers and moving consumer manufacturing operations to Hong Kong and Taiwan that January. But bad decisions continued to haunt its consumer division. *Raiders Of The Lost Ark* and *E.T.*, while initially strong in sales, tanked. *E.T.* and the enormous financial concessions awarded to Spielberg ensured that only severe losses could be accrued from the game. Consumer game sales had accounted for two thirds of the company's profit, so it was no surprise when, that May, over 200 layoffs were added to the previous count. While computers hadn't been hit by the videogame problems and were still considered stable, Atari's recently released flagship high-end computer, the expensive 1200XL, was plagued with design problems, including incompatibility issues with some older titles. Forcing Atari to replace it several months after its launch with the 600XL and 800XL computers further hurt the already-weak consumer division. 5200 sales had also been disappointing, further compounding Atari's problems. Around 1,000 people were laid off at Atari's corporate headquarters that June, and the reason became apparent in July. Atari reported a staggering $310.5 million operating loss for the second quarter. CEO Ray Kassar was forced to resign, and tobacco executive James Morgan was brought in to become Atari's saviour and hopefully revive the entire industry.

And the industry was in dire need of a saviour, as the second-biggest competitor, Mattel, reported a $156.1 million net loss for the same second quarter.

But a saviour never came, as the bulk of the console and game companies in the industry either started their own layoffs or completely closed up shop. Zircon, with its purchased Fairchild Channel F, was gone. Emerson's Arcadia 2001 left the market after only a year. Magnavox would cancel its own next-gen console, the Odyssey 3000, by the end of the year and withdraw the Odyssey 2 soon after. Larger game publishing companies like Imagic and Activision reported large losses and laid off major portions of their staff, while most of the smaller companies that had sprung up closed their doors after producing only a handful of games. Retailers began slashing prices in preparation for the Christmas season as market analysts blamed greed for the situation everyone was now facing.

"The chaos in the business has arisen because of unrealistic expectations," said Goldman Sachs analyst Richard Simon in an October 1983 interview with *The Miami News*. "About 100 companies scrambled to get a foothold in the industry. They churned out a bewildering number of games, many of them nothing more than uninspired imitations. Some companies came and went within a few months. All the manufacturers played a game of chicken."

FROM THE FRONTLINES

Keith Robinson (former Mattel employee and member of the Blue Sky Rangers Intellivision development team)

"Everyone realised at different times when we were really finished. There was a massive layoff of programmers in August 1983. Over a third of the staff. Another in November; more than half the remainder. Finally, the last programmers were let go in January 1984. I know programmers who after the August layoff felt it was over; others were optimistic right through January CES. We had a Halloween party, though, where the mood was fairly pervasive that the ship was going down. I think that's when I started thinking about what I wanted to do next. The funny thing is, though, while the media treated the crash as proof that videogames were just another fad that had run its course, a number of us in the industry did see that there was a dedicated market of gamers that would always want to play the next thing. We were not surprised to see the industry bounce back."

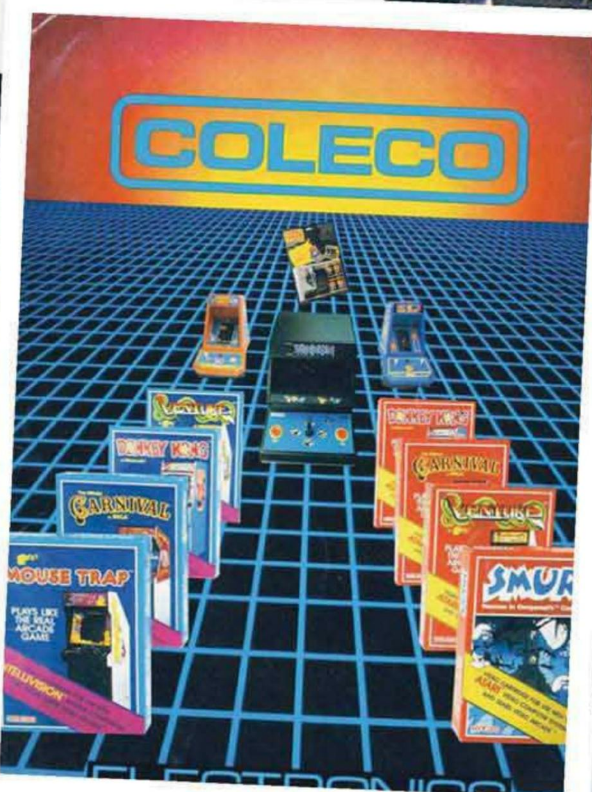
Back at Atari, Jim Morgan set about cutting the fat and began planning a leaner Atari to hopefully turn it around against insurmountable odds. He immediately froze all products for an evaluation period, which only further hurt Atari by causing some products planned for holiday season releases to miss their deadlines. He then began paring down operations where he could, as well as trying to solve the massive back-stock problem. Extra stock from warehouses and plants shutting down was dumped on the market and in landfills that autumn, including one mass dumping in Alamogordo, New Mexico, that caused a public relations nightmare for Atari as the press got wind of it and remains emblematic of the market crash. 1983 ended with Atari reporting a loss of $539 million on sales of $1.1 billion. Atari was literally losing half of everything sold.

AND IT ALL COMES DOWN

As 1984 started, it was clear that the 5200 was not generating the sales needed, as even a cost-reduced version failed to spark sales. The 5200 was cancelled that February as efforts moved to the already-in-development 7800. Mattel's redesigned Intellivision II also failed to garner

In 1982 Coleco branched out to port its licensed games to other platforms like the Mattel Intellivision and Atari 2600. With Mattel doing the same and Atari following suit the next year, consumers only became more confused as titles were no longer exclusive to a console. Nonetheless, some accused Coleco of dumbing down its ports to drive people to the superior ColecoVision versions.







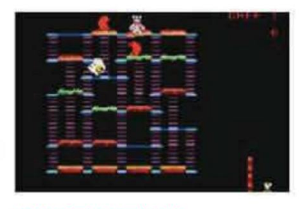
SIX OF THE BEST



KILLER BEES

Publisher: **Magnavox**
Year released: **1983**
System: **Odyssey 2**

No, it's not the famous *SNL* skit; it's a decent game. Control a swarm of bees out to destroy robots and replace them with little gravestones. Look out for the rival swarm, though! The game also works with the Odyssey 2's voice synthesizer for added sound effects.



BURGERTIME

Publisher: **Coleco**
Year released: **1984**
System: **ColecoVision**

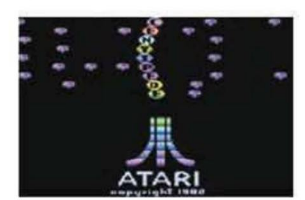
A near-perfect port of the arcade game, and that's saying a lot considering that the previous Intellivision port had set the bar pretty high. A true gem on a platform already known for its arcade ports, released at the height of the market crash.



POLE POSITION

Publisher: **GCE**
Year released: **1983**
System: **Vectrex**

A very good port for a system that would be discontinued the following year. *Pole Position* translates very well to the vector format, with crisp, detailed cars and mountain ranges that take advantage of the Vectrex's four buttons for shifting and acceleration.



CENTIPEDE

Publisher: **Atari Inc**
Year released: **1983**
System: **Atari 2600**

One of those great ports of an arcade game to the 2600, *Centipede* manages to capture the feel and gameplay of the coin-op. Add to that the trackball controller developed for games like this and you have as accurate a port as you can get on the 2600.



SWORDS & SERPENTS

Publisher: **Imagic**
Year released: **1984**
System: **Intellivision**

The 2600 had *Adventure*, the ColecoVision got *Venture*, and the Intellivision was graced with *Swords & Serpents*. Decent graphics and great arcade-style gameplay make this a quest worth taking.



FATHOM

Publisher: **Imagic**
Year released: **1983**
System: **Atari 2600**

Simply a beautiful game for the 2600 – picture a primordial *Ecco The Dolphin*. Your job is to rescue Neptune's daughter at the bottom of the ocean. Hypnotically moving jellyfish help to add to the subaquatic feeling of the game.

consumer confidence, causing the company to close down its Mattel Electronics division in its entirety during January of 1984 and sell off the rights to its Intellivision. Eventually winding up in the hands of former employees, the Intellivision would remain on the market mainly through mail order as a pale shadow of its former self until 1990, when it was finally laid to rest. Milton Bradley's Vectrex was discontinued by that summer.

The game publishers that could survive started diversifying to include the relatively stable computer industry. Personal computers had been given an air of legitimacy by IBM's entry into the market in 1981. However, across 1982 and 1983, simultaneous with the problems in the home videogame industry, the home computer market went through its own massive upheaval thanks to Jack Tramiel's aggressive placement of the Commodore VIC-20 and Commodore 64. Everett Purdy, senior vice president of merchandising for computer retailer Service Merchandise at the time, stated in a June 1983 edition of *The New York Times*: "I've been in retailing 30 years and I have never seen any category of goods get on a self-destruct pattern like this."

The price-slashing war initiated by Tramiel, done to increase market share to balance the dangers of an unstable market, caused a shakeout, with the most significant loss being Texas Instruments' departure from the market. Damage was also done to consumer perception. Having already seen prices drop for videogame systems, now the low-end computer market was hitting price tags comparable to those of game consoles. "When they went to $99, people started asking, 'What's wrong with it?'" said William G Kelley, then president of American Home Video Corporation. Luckily, the home computer market began moving towards higher-end hardware again in 1984. By the time the consumer videogame industry crash had reached its crescendo in 1984, the home computer market, while not as big a boon as expected, was still seen as the next fertile territory.

Atari was looking to make further inroads into the computer market and provide stability through advanced computer research ever since the debacle



Atari's sizeable but scaled down booth at the 1983 Consumer Electronics Show in Chicago. Still trying to put on a big show, the booth was much more focused thanks to Jim Morgan's direction for the company. The top meeting space was cut down to about a quarter of the size of the previous year.

"The crash had taken out the juggernaut of the industry, the champion of videogames itself"

of the 1200XL. And while its advanced research division fell apart that May with the resignation of legendary Xerox/Parc researcher Alan Kay, promising technology that would be leveraged for videogames was also in production. This included a partnership with Amiga Corporation for a high-end 68000-based game console expandable into a fully fledged computer, targeted for release in late 1984. With this set to bring Atari into the 16-bit console market a full four years before the Sega Mega Drive, there's no telling if it would have been too far ahead of its time to do well. However, the question became moot in early July as employees arrived at work to find out that Atari had been ripped apart at the seams.

Warner Communications had been the victim of an attempted hostile takeover by Rupert Murdoch earlier in the year, and it had needed to act to make sure that it never happened again. Hiring a special firm to advise on making the company leaner and less of a takeover target, the resulting report suggested getting rid of several subsidiaries, the foremost being Atari.

Throughout that spring, Warner had been looking for a buyer for Atari. Going through several companies, including the European electronics mainstay Philips, Warner finally decided to take an offer to sell off at least part of the company to none other than Jack Tramiel. Tramiel had been ousted from his company, Commodore, earlier in the year and, after a brief retirement, was looking to re-enter the computer industry to fight back against what he thought would be the oncoming onslaught of the Japanese in the market. Forming Tramel Technology Limited – purposely misspelled so that people would pronounce his last name correctly – he began looking at various companies he could leverage for manufacturing, distribution or technology. He spent much of the spring travelling around California, visiting everything from small startups to large corporations. A previous offer that May to buy Atari's consumer operations from Warner went nowhere, but suddenly, at the end of June, Tramiel was getting calls saying that Warner was interested after all. Negotiating for no money down – Warner would get stock in the new company and in return Tramiel would take all the bad Atari debt with him – by 3 July he was the proud owner of Atari's consumer division. Merging it with Tramel Technology, he promptly renamed his company to Atari Corporation and set about bringing his next-generation 16-bit computer to the home computer market.

Warner hung on to the profitable coin division for a time, spinning it off into Atari Games and not long after that selling majority ownership to the Japanese company Namco. The original Atari – Atari Inc – the company that once held 80 per cent of the market, was no more. The crash had taken out the juggernaut of the industry, the champion of videogames itself.

FROM THE FRONTLINES

Jerry Jessop (former Atari Inc employee)

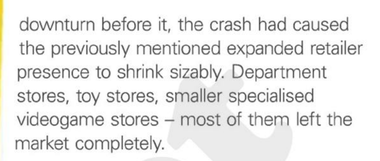


"I was on vacation in upstate New York at the time, and the news came as a shock but not a surprise. On the technical side, we all started getting nervous in mid-1980 and into '81, as Atari went on a hiring spree of Harvard MBAs to steer the company. Bushnell left in '79 and by late '80, while all looked good on the surface, underneath the very foundation and core of the company was changing. The home computer division and home games divisions were split up physically, and a huge hiring spree further diluted the company as it spun apart. There was no collaboration or communication between the groups and the atmosphere changed. The very culture that made Atari was quickly being eradicated.

"Post crash rebound… I honestly never thought about it much. I was still young and could not rationalise how these individuals came to take over the company and drive it into the ground. I knew videogames would be around forever and that what we started would continue again at some point. When I saw Nintendo coming into the picture, that's what gave me some hope. I was confident the Japanese style of engineering driving marketing would help put things back in order at some point. It certainly was not going to be the Tramiels that would rebuild the industry."

MARKET PERCEPTIONS

From the consumer side, in the US it was hard to tell that the massive implosion had occurred with all the product still available, even if most of the companies behind those products were no longer there. There was so much stock dumped on the market that even deep discounts couldn't clear it all out. While the industry was considered 'vacant' for the next two years, there was enough stock on the market to keep it far from being dry. 2600s, ColecoVisions, Intellivisions and more were still actively sold for bargain prices, though at nowhere near the number of locations as before. Like the coin-op industry downturn before it, the crash had caused the previously mentioned expanded retailer presence to shrink sizably. Department stores, toy stores, smaller specialised videogame stores – most of them left the market completely.





REVIVAL

The focus in consumer electronics in 1985 was still on the computer industry. However, there were two important occurrences at the end of the year that led to the revival of the US videogame industry in 1986. Jack Tramiel had kept Atari Corporation afloat by tapping into the large back stock of videogame products that he had inherited. The 7800 had been a casualty of the purchase, with the rights staying with Warner, which insisted that he had to pay the console's developer, GCC, if he wanted it. Tramiel finally acquiesced in May 1985, and after negotiating with GCC for the ten original launch titles as well, by that August he was looking to start an actual videogame division with Atari Corporation. He lured Michael Katz away from computer game leader Epyx, and tasked him with starting up Atari Corporation's new electronic entertainment division. Launching the long-in-development cost-reduced Atari 2600, nicknamed the 2600 Jr, for the Christmas 1985 season at a very successful $50 price point, sales were strong and signs of a public ready to begin consuming again were there. As the January 1986 Consumer Electronics Show came into focus, Atari and Katz reintroduced the 7800. They initially distributed the original stock manufactured back in 1984, and it quickly began selling out everywhere throughout the rest of the winter and spring.

During the same holiday period, Nintendo of America, the US subsidiary of Japanese company Nintendo, began a test marketing of a new console in the New York area. After great success in Japan, it had spent the previous two years trying to get its console, the Famicom, onto the declining US market. Going through several revisions and a name change to the Nintendo Entertainment System (NES), by the autumn of 1985 Nintendo managed to get into toy stores and department stores by including a toy robot and specifically not referring to its games as 'videogames'. Through a grassroots effort with guerrilla marketing, New Yorkers were assailed by this little grey box with a lightgun and toy robot asking to come into their living room. Though disappointing in sales, a February test market in Los Angeles proved much more promising. And as both the NES and 7800 began spreading out around the country, rumblings of a possible industry and market revival began. When the summer 1986 CES came around and another Japanese company, Sega, announced that it was throwing its hat in the ring as well with its Master System, the rumblings became louder. Three new consoles on the market, two with promising sales already? It must be a good sign.

With the national launches of all three consoles throughout the autumn and Christmas season, by January 1986 it all became clear. The industry had revived, and Nintendo was at the forefront.

Dangerous Dave

BY JOHN ROMERO, DEVELOPER

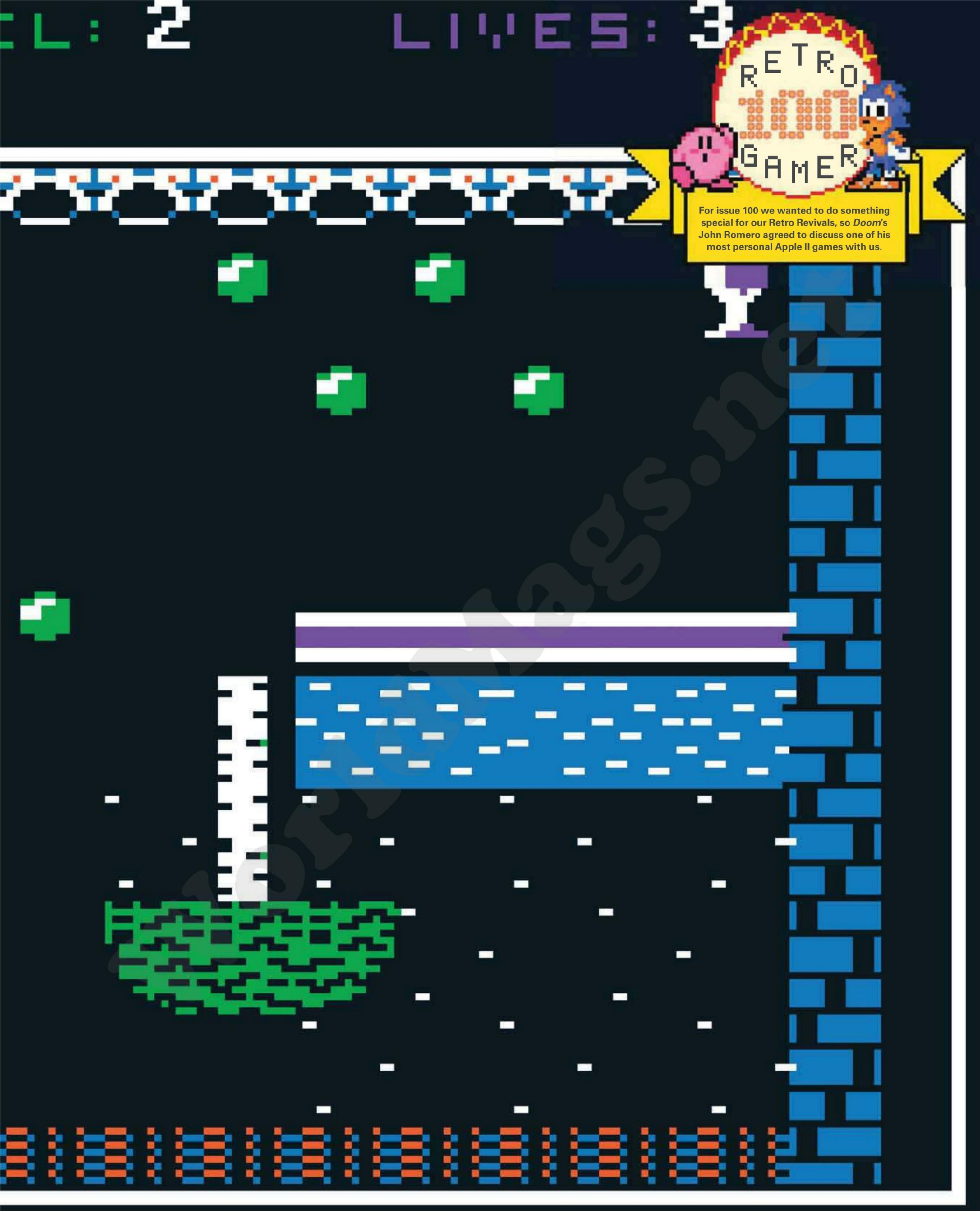


» APPLE II
» UPTIME
» 1988

Back in 1988 I was programming games on my Apple IIe, and only a few years earlier *Super Mario Brothers* came along and changed the universe. I loved *Mario* and the Fall of 1988 just felt like the right time to make a *Mario*-style game, so I came up with the idea of a guy named Dangerous Dave that collects trophies from a deserted pirate's hideout and after ten levels, he wins. I made the game pretty tough, so ten levels felt like a real challenge. I programmed the game in 6502 assembly language as an example of how to use my GraBASIC programming language.

It took me about a month to make, but *Dangerous Dave* was well-received, so in 1990 I made a PC version with CGA, EGA and VGA graphics, and all-new levels. It was the first game I wrote in C, as opposed to assembly language. The graphics drawing functions were in 8086 assembly, though. With all the graphics for all three modes, plus ten levels, the game was 73k compressed. This meant it could be played on all kinds of low-end computers. In fact, because I used no sound hardware (just the built-in speaker) the audio works on all Windows computers (even Win2000) natively without DOSBox.

After release, the game proceeded to be copied all around the world. Eventually, there were ten *Dangerous Dave* games based off my original Apple II version, as well as my 1991 id Software sequel, *Dangerous Dave in the Haunted Mansion*. Even now I still get fan mail about it, with many of the emails being about how they played the game when they were a kid. Man, I feel old!



For issue 100 we wanted to do something special for our Retro Revivals, so *Doom*'s John Romero agreed to discuss one of his most personal Apple II games with us.



>> Due to all the awesome features in this month's issue we've got slightly fewer reviews. Worry not though, as we've managed to include some big hitters, including the latest Soul Calibur, and Resident Evil

PICKS OF THE MONTH



DARRAN
Resident Evil: Revelations
It's not perfect, but I still found myself enjoying this, mainly because of Raid Mode.



STUART
Soul Calibur V
The main story mode is laughably short, but it's good to see that the soul still burns.



DAVID
Resident Evil: Revelations
I think this is a fantastic addition to the series, and yet another must own 3DS game.

Resident Evil: Revelations

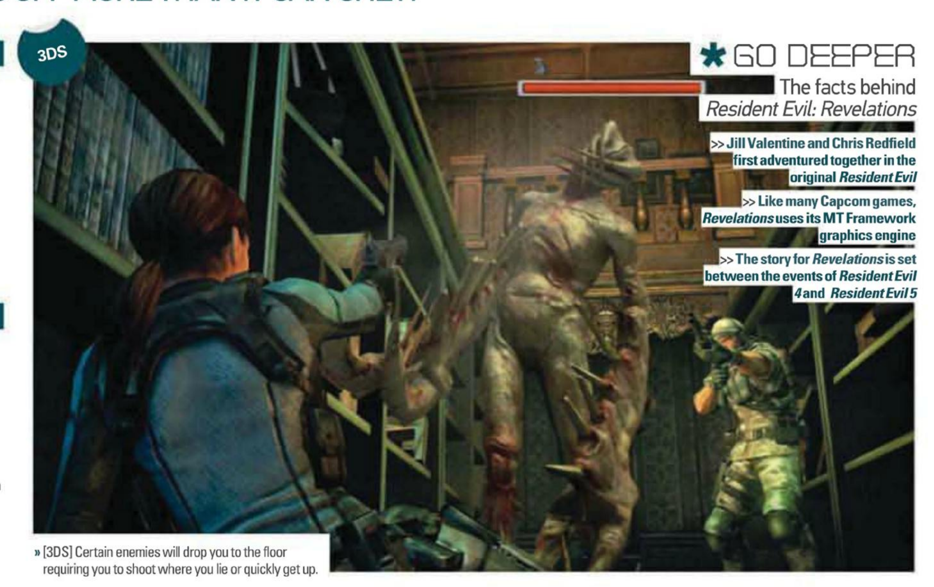
CAPCOM BITES OFF MORE THAN IT CAN CHEW

INFORMATION

- » **FEATURED SYSTEM:** 3DS
- » **ALSO AVAILABLE ON:** N/A
- » **RELEASED:** OUT NOW
- » **PRICE:** £39.99
- » **PUBLISHER:** NINTENDO
- » **DEVELOPER:** CAPCOM
- » **PLAYERS:** 1 (1-2 MULTIPLAYER)

BRIEF HISTORY

» *Resident Evil* was first released for the PlayStation in 1996, and immediately become one of the PlayStation's most successful licences. In 2005, the horror franchise took a more action-orientated approach with *Resident Evil 4*, while *Resi 5* introduced co-op play and ropey AI. The franchise as a whole has sold over 45 million units, and remains one of Capcom's most popular series.



» [3DS] Certain enemies will drop you to the floor requiring you to shoot where you lie or quickly get up.

GO DEEPER
The facts behind *Resident Evil: Revelations*

>> Jill Valentine and Chris Redfield first adventured together in the original *Resident Evil*

>> Like many Capcom games, *Revelations* uses its MT Framework graphics engine

>> The story for *Revelations* is set between the events of *Resident Evil 4* and *Resident Evil 5*



After the disappointment of *Resident Evil: The Mercenaries 3D*, Capcom is hoping to set things right with *Revelations*. Sadly, while it's an enjoyable adventure, it's definitely a case of 'must try harder' for all involved.

Initially, it looks promising; the game alternates between three separate story threads that slowly build together into a rather satisfying set-up, hopefully filling in the blanks between *Resi 4* and *Resi 5*. Sadly, while the story itself is sound, the new characters introduced are instantly forgettable, with Capcom seemingly happy to deliver a wave of bland stereotypes – the wise-cracking computer nerd, the gruff boss – that simply don't make an impact in the same way that Jill Valentine or Leon S. Kennedy did.

Gameplay wise, *Revelations* is a decent adventure that tries to combine the horror and atmosphere of the original PSone games with the big budget set-pieces of the later games, but doesn't really pull it off. It retains many elements of the series as a whole, but it feels diluted, even with a 10-hour playtime. Clever touch-screen elements are forgotten all too quickly, puzzles are extremely basic, and the bland run of identikit enemies is disappointing. The ability to scan locations and enemies for secrets and hidden items is an interesting new touch, but fresh ideas like this are few and far between.

By far the best element of *Resident Evil: Revelations* is Raid Mode, which allows one or two players to run gauntlets that are packed with enemies. There's lots to unlock, high scores to chase and it's a heck of a lot of fun, even if it lacks the killer pace of *The Mercenaries*. *Resident Evil: Revelations* isn't a bad game; we were just expecting a lot more.



WHY NOT TRY

▼ SOMETHING OLD
ALONE IN THE DARK (PC)

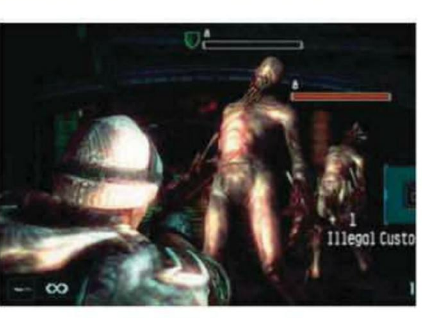


▼ SOMETHING NEW
RESIDENT EVIL: DEADLY SILENCE (DS)



OPINION

I'm one of those people that equally loves both sides of the *Resident Evil* series so I was excited to see how *Revelations* would combine the two. Sadly, I don't think it does a great job. Neither style is captured that well and the whole thing feels a bit under developed to me.
Ashley Day



In a Nutshell

While *Resident Evil: Revelations* is an entertaining enough adventure, it's a rather disappointing *Resident Evil* game, coming across as a watered-down rehash of what has come before.



>> Score **70%**

SoulCalibur V

SIXTEEN YEARS AND SIX GAMES IN, DOES THE SOUL STILL BURN BRIGHTLY?

» **FEATURED SYSTEM:** XBOX 360 » **ALSO AVAILABLE ON:** PS3 » **RELEASED:** OUT NOW
» **PRICE:** £51.99 » **PUBLISHER:** NAMCO BANDAI » **DEVELOPER:** IN-HOUSE / PROJECT SOUL » **PLAYERS:** 1 -2





***SoulCalibur* is one of the more accessible fighting franchises out there,** allowing newcomers to string together devastating attacks by furiously pummelling buttons as if their lives depended on it, the very first time they pick up the game. But hardcore fans recognise that there's a layer of depth beneath its gloss and exaggerated fighting style, one which, for the most part, allows more considered attacks to triumph over mindless button-mashing.

The latest instalment introduces several new faces (including the special guest of *Assassin's Creed*'s Ezio Audiwhatshisface) and a brand new super gauge that slots comfortably into its time-honoured swordplay. It essentially works like this: skilled fighting gradually fills up the gauge and you can expend layers of it performing either Guard Impacts (parries), Brave Edges (enhanced regular attacks) or Critical Edges (the equivalent of *Street Fighter IV*'s Ultra Combos).

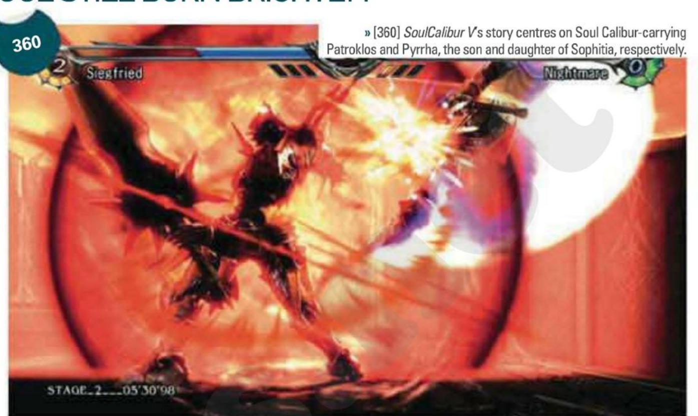
But while the fighting certainly feels fuller bodied, the total package feels emaciated in comparison to other fighters and previous episodes. In addition to the customary arcade mode, you get a Quick Battle mode that lets you fight through randomly created computer fighters, an unlockable expert mode, and a story mode that is fairly forgettable and over too quickly. Still, there's a wonderful fighter creator to round off the package somewhat, which boasts an exhausting amount of options, allowing you to select the appearance, fighting style, even the tone of voice of your fighter.

SoulCalibur V doesn't drop the ball as far as the action is concerned, but lacking the epic single-player components of previous games in the series (see Edge or Weapon Master Mode) we just wish it put up more of a fight.

In a Nutshell

The fighting is as solid as ever and in the arena of weapon-based brawlers *SoulCalibur* still reigns supreme. But when judged on the single-player experience, previous instalments have been better.

>> Score **82%**



» [360] *SoulCalibur V*'s story centres on Soul Calibur-carrying Patroklos and Pyrrha, the son and daughter of Sophitia, respectively.





OPINION

I'm not really feeling it here. There's no denying that *SoulCalibur V* is a gorgeous looking game, and the new roster is solid, but it just isn't wowing me. *SoulCalibur* remains my favourite version, and *SoulCalibur V* adds nothing new for me.

Darran Jones

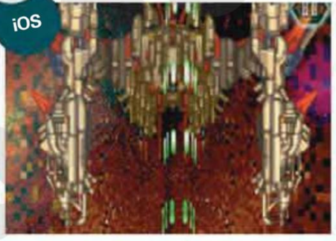


Choplifter HD

» **SYSTEM:** XBOX 360
» **PRICE:** 1,200 POINTS » **PLAYERS:** 1

>> *Choplifter* returns with an HD remake that sticks to the original's frantic rescue-and-deliver gameplay but shakes things up with foreground targets, unlockable choppers, hidden objectives and zombies. Yes, zombies. It's a passable re-imagining, but one that lacks the polish and charm of the original. With an easy-to-grasp control system, it's quick to pick up, but it needs rescuing from its hefty price point.

>> Score **60%**



Rayforce

» **SYSTEM:** iOS
» **PRICE:** £7.99 » **PLAYERS:** 1

>> *Cave* has proved itself to be the king of iOS shoot-'em-ups, but we're always happy to see new efforts. While this is an accurate port of Taito's excellent shooter, *Rayforce* is let down in a number of key areas. It suffers from a poor frame rate, and the controls don't feel as tight as we'd like. Then, of course, there's the absurd price to consider. It's still a great shooter; it's just not well implemented on its new home.

>> Score **69%**



SoulCalibur

» **SYSTEM:** iOS
» **PRICE:** £7.99 » **PLAYERS:** 1

>> Fighting games always suffer on iOS and *SoulCalibur* is no exception. The sharp controls of the original are nowhere to be seen, while the lack of multiplayer is completely unforgivable. Sadly, while several modes are included, the best, Mission Mode, is entirely absent, meaning it won't be long before you're bored with the available content. Compared to other iOS releases like *Street Fighter IV*, this is far too slight.

>> Score **58%**



Breakout: Boost

» **SYSTEM:** iOS
» **PRICE:** FREE » **PLAYERS:** 1

>> We like *Breakout: Boost*. It features plenty of fun power-ups, well-designed levels and crisp visuals. Sadly, you only get the first five levels free, with additional stages costing extra cash. This would be fine if other, better *Breakout* clones weren't already available on the App Store, but they are, making *Breakout: Boost* pretty poor value for money. Fun, but it's unlikely to hold your attention for very long.

>> Score **59%**

RETRO ROUND-UP

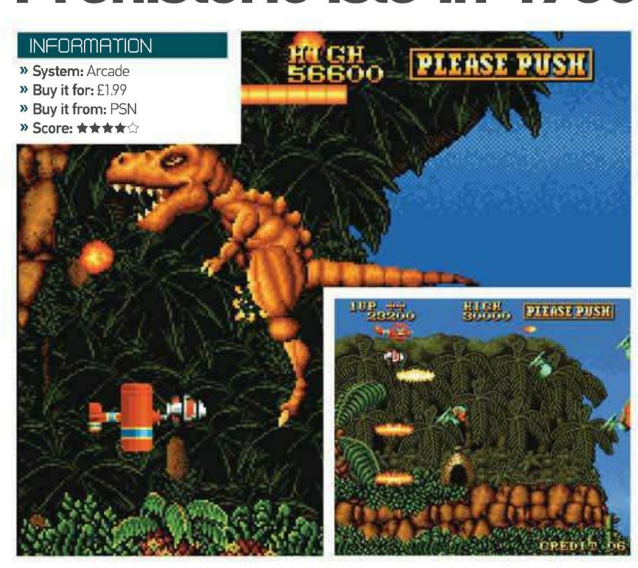


>> Every month we take a look at the latest classics that have been re-released for a new generation of gamers

DOWNLOAD OF THE MONTH

Prehistoric Isle In 1930

INFORMATION
» **System:** Arcade
» **Buy it for:** £1.99
» **Buy it from:** PSN
» **Score:** ★★★★☆



We've been enjoying SNK's range of classic arcade games, and now it's delivered one of our favourite titles from its huge back catalogue. *Prehistoric Isle* is an amazingly fun game, and not just because of its excellent premise.

Unlike many other shoot-'em-ups of the time, there were no aliens or World War II planes to take down in *Prehistoric Isle*, and you weren't armed with a state-of-the-art spaceship. Instead you flew your trusty biplane through a mysterious island, taking down hordes of dinosaurs.

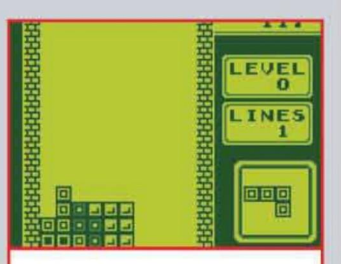
It was a fantastic concept for its time and it remains a highly satisfying shooter, mainly due to its innovative power-ups and massively satisfying boss encounters. Shooting dinosaur eggs releases speed-ups, money or a power-up, which bolts to the front of your ship. In addition to acting as a limited shield, you can rotate the device around you, which will cause it to spit out different types of firepower depending on where it is positioned.

Then there are the huge dinosaur bosses, both real and mythical, which offer challenging attack patterns and can take tremendous amounts of firepower before they die. In fact, the only real downside to this latest release is that it no longer supports the original arcade game's two-player mode.

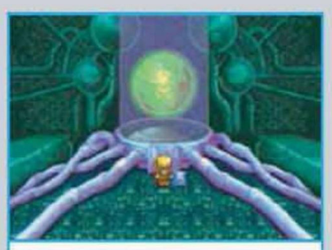
>> OTHER HIGHLIGHTS



Syndicate
» **System:** PC
» **Buy it for:** $5.99 (£3.72)
» **Buy it from:** www.gog.com
» **Score:** ★★★★★
» With the reboot happening very soon, GOG has secured the rights to the original PC game. The first thing that strikes you is how well it still plays. The mission structure is excellent and varied, while the weapons are satisfying to use. Controls are also intuitive, making controlling your squad a dream. Best of all, though, *Syndicate* balances distinct genres to create a satisfying whole. Do not miss this.



Tetris
» **System:** Game Boy
» **Buy it for:** £3.60
» **Score:** ★★★★★
» Henk Rogers went to great lengths to ensure that gamers got to enjoy *Tetris* for the Game Boy's debut, and we're glad he did. While there are superior versions on later handhelds, there's something amazingly enthralling about Game Boy *Tetris*. Yes, it lacks the many modes and variations that appeared in later games, but there's a pureness to this version that remains unmatched. A true classic that every 3DS owner should download.



Wild Arms
» **System:** PSone
» **Buy it for:** £3.99
» **Score:** ★★★★★
» JRPGs were plentiful on the original PlayStation, but *Wild Arms* stood out at the time thanks to its unique setting – the world of Filgaia where the adventure takes place is a cross between medieval Europe and the Wild West – alongside memorable characters and a clever combat system. 16 years on and *Wild Arms* is still an excellent RPG, mainly because, despite several sequels, nothing has come close to capturing its unique style and distinct quirks.



Prince Of Persia
» **System:** SNES
» **Buy it for:** 900 Points
» **Score:** ★★★★★
» After a lengthy slumber, the Wii Virtual Console gets a new game, and it's a doozy. Coded by Nihon Computer System, *Prince Of Persia* for the Super Nintendo is a significant update to Jordan Mechner's Apple II classic with new levels and rearranged layouts, additional boss characters to fight and greatly enhanced visuals. Best of all, it's lost nothing in the intervening years, playing just as slickly as it did back in 1992.

VIRTUAL CONSOLE

At last. After seven long months we finally get a new Virtual Console game on the Wii. Here's hoping more are to come...

Prince Of Persia
» **System:** Game Boy Color
» **Buy it for:** £4.50
» **Score:** ★★★★☆

Trip World
» **System:** Game Boy
» **Buy it for:** £2.70
» **Score:** ★★☆☆☆

Balloon Kid
» **System:** Game Boy
» **Buy it for:** £2.70
» **Score:** ★★★☆☆

Bionic Commando
» **System:** Game Boy
» **Buy it for:** £3.60
» **Score:** ★★★★☆



PSN

It's been a good month for PSN thanks to the ace RPG *Arc The Lad* and some fun Minis arcade conversions from SNK

Arc The Lad
» **System:** PSone
» **Buy it for:** £3.99
» **Score:** ★★★★★

Psycho Soldier
» **System:** Arcade
» **Buy it for:** £1.99
» **Score:** ★★★☆☆

Pandemonium 2
» **System:** PSone
» **Buy it for:** £3.99
» **Score:** ★★☆☆☆

Victory Road
» **System:** Arcade
» **Buy it for:** £1.99
» **Score:** ★★★☆☆

P.O.W.: Prisoners Of War
» **System:** Arcade
» **Buy it for:** £1.99
» **Score:** ★★★☆☆



PC SERVICES

Team17 is the latest to join GOG. There are already some great games on offer, including the excellent *Alien Breed: Tower Assault*

Superfrog
» **Buy it for:** $5.99 (£3.72)
» **Buy it from:** www.gog.com
» **Score:** ★★★☆☆

Worms United
» **Buy it for:** $5.99 (£3.72)
» **Buy it from:** www.gog.com
» **Score:** ★★★☆☆

Alien Breed: Tower Assault
» **Buy it for:** $5.99 (£3.72)
» **Buy it from:** www.gog.com
» **Score:** ★★★★★

Fallout: Classic Collection
» **Buy it for:** €19.99 (£16.64)
» **Buy it from:** www.dotemu.com
» **Score:** ★★★★★

Commandos Classic Collection
» **Buy it for:** €19.99 (£16.64)
» **Buy it from:** www.dotemu.com
» **Score:** ★★★☆☆

>> Homebrew type-in

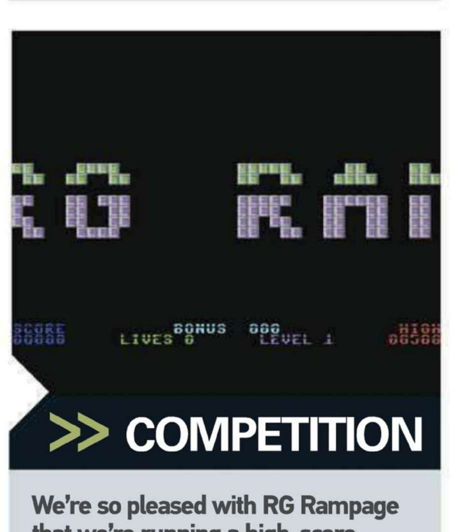
T'was the night before issue 100 and all through the publishing house, not a creature was stirring… except Darran! Use your C64 to help him gather pages while avoiding out-of-control security robots in our type-in game!

RG RAMPAGE

A REALISTIC SIMULATION OF A DEADLINE IN THE RETRO GAMER OFFICE

To make our 100th issue really special, Jason Kelk took a break from commenting on other people's homebrew projects and decided to make his own. The end result is a slick and enjoyable platformer called *RG Rampage*. It's a C64 type-in, so be sure to save the program before running the game!

If you don't fancy doing all that typing – which, let's face it, is where the real fun is – you can simply download *RG Rampage* from http://retrogamer.net/rampage



>> COMPETITION

We're so pleased with RG Rampage that we're running a high-score competition. Simply submit your best score with photo or screenshot proof to retrogamer@imagine-publishing.co.uk. The highest score will receive a copy of Retro Gamer eMag Load 3



```
10 REM RG RAMPAGE BY JASON/COSINE 2011
20 C=0
30 FORL=32768TO36741
40 READD:POKEL,D:C=C+D
50 NEXTL
60 IFC<>425944THENPRINT"DATA ERROR!"
70 SYS32768
100 DATA 120,169,51,133,1,162,0,160,0,189
102 DATA 0,208,192,2,208,2,41,0,157,0
104 DATA 160,73,255,157,0,164,189,0,209,192
106 DATA 2,208,2,169,0,157,0,161,73,255
108 DATA 157,0,165,200,192,8,208,2,160,0
110 DATA 232,208,212,162,0,189,35,140,157,0
112 DATA 162,232,224,136,208,245,169,54,133,1
114 DATA 88,162,0,138,133,252,169,0,6,252
116 DATA 42,6,252,42,133,253,138,41,48,74
118 DATA 74,133,254,138,41,12,10,10,133,255
120 DATA 138,133,252,169,0,70,252,106,70,252
122 DATA 106,5,253,5,254,5,255,157,0,192
124 DATA 232,208,206,162,0,189,171,140,157,0
126 DATA 170,189,171,141,157,0,169,157,0,171
128 DATA 189,171,142,157,0,172,232,208,232,162
130 DATA 0,188,173,140,185,0,192,157,0,168
132 DATA 188,172,140,185,0,192,157,1,168,188
134 DATA 171,140,185,0,192,157,2,168,188,237
136 DATA 140,185,0,192,157,64,168,188,236,140
138 DATA 185,0,192,157,65,168,188,235,140,185
140 DATA 0,192,157,66,168,188,45,141,185,0
142 DATA 192,157,128,168,188,44,141,185,0,192
144 DATA 157,129,168,188,43,141,185,0,192,157
146 DATA 130,168,188,109,141,185,0,192,157,192
148 DATA 168,188,108,141,185,0,192,157,193,168
150 DATA 188,107,141,185,0,192,157,194,168,188
152 DATA 173,141,185,0,192,157,0,169,188,172
154 DATA 141,185,0,192,157,1,169,188,171,141
156 DATA 185,0,192,157,2,169,188,237,141,185
158 DATA 0,192,157,64,169,188,236,141,185,0
160 DATA 192,157,65,169,188,235,141,185,0,192
162 DATA 157,66,169,232,232,232,224,63,240,3
164 DATA 76,151,128,169,53,141,0,221,169,24
166 DATA 141,22,208,169,248,141,24,208,169,11
168 DATA 141,32,208,169,0,141,33,208,169,11
170 DATA 141,34,208,169,15,141,35,208,169,11
172 DATA 141,37,208,169,14,141,38,208,120,169
174 DATA 1,133,130,169,168,141,254,255,169,132
176 DATA 141,255,255,169,93,141,250,255,169,133
178 DATA 141,251,255,169,127,141,13,220,141,13
180 DATA 221,169,0,141,18,208,169,27,141,17
182 DATA 208,169,1,141,25,208,141,26,208,169
184 DATA 53,133,1,88,162,0,169,32,157,152
186 DATA 191,232,224,80,208,248,162,0,189,252
188 DATA 136,157,152,191,189,30,137,157,167,191
190 DATA 189,1,137,157,187,191,189,6,137,157
192 DATA 202,191,189,11,137,157,215,191,232,224
194 DATA 5,208,221,162,0,169,6,157,152,219
196 DATA 157,192,219,169,3,157,167,219,169,2
198 DATA 157,182,219,157,222,219,169,5,157,202
200 DATA 219,169,4,157,212,219,232,224,10,208
202 DATA 220,32,158,132,32,80,132,32,150,132
204 DATA 32,235,142,162,0,169,13,157,24,217
206 DATA 169,12,157,184,217,232,224,160,208,241
208 DATA 32,103,133,162,0,189,65,189,157,64
210 DATA 189,189,105,189,157,104,189,189,145,189
212 DATA 157,144,189,189,185,189,157,184,189,189
214 DATA 225,189,157,224,189,189,9,190,157,8
216 DATA 190,189,49,190,157,48,190,232,224,39
218 DATA 208,209,166,151,202,16,37,166,150,188
220 DATA 66,137,136,152,10,10,10,168,162,0
222 DATA 185,8,160,149,152,200,232,224,7,208
224 DATA 245,166,150,232,224,25,208,2,162,0
226 DATA 134,150,162,7,134,151,169,80,160,32
228 DATA 6,152,144,1,168,140,103,189,160,32
230 DATA 6,153,144,1,168,140,143,189,160,32
232 DATA 6,155,144,1,168,140,223,189,160,32
234 DATA 6,156,144,1,168,140,7,190,160,32
236 DATA 6,157,144,1,168,140,47,190,160,32
238 DATA 6,158,144,1,168,140,87,190,173,0
240 DATA 220,41,16,240,3,76,28,130,32,80
242 DATA 132,32,150,132,32,158,132,169,0,133
244 DATA 147,169,181,141,122,136,169,137,141,123
246 DATA 136,169,3,133,246,32,80,132,32,221
248 DATA 135,169,2,133,247,169,5,133,248,169
250 DATA 0,133,249,133,250,162,0,138,149,184
252 DATA 232,224,8,208,249,165,145,133,160,165
254 DATA 146,133,161,169,160,133,176,169,176,133
256 DATA 183,169,0,133,184,133,191,133,142,133
258 DATA 143,133,144,162,16,32,0,143,32,103
260 DATA 133,32,208,133,32,59,135,32,200,136
```



» [C64] We're functioning automatik.

You don't get more retro than a game you actually have to type in! This was a great opportunity to pay tribute to the games we all used to type in when we were kids.



» [C64] Strange place to leave a page…

```
262 DATA 32,97,134,165,228,201,1,240,41,201
264 DATA 2,208,31,32,143,136,32,143,136,32
266 DATA 143,136,32,121,136,201,255,208,3,76
268 DATA 180,131,133,174,32,121,136,133,175,162
270 DATA 8,32,0,143,32,112,133,76,30,131
272 DATA 162,28,32,0,143,162,32,32,0,143
274 DATA 169,161,133,176,160,12,32,103,133,32
276 DATA 103,133,32,103,133,32,103,133,165,184
278 DATA 73,8,133,184,136,208,235,169,0,133
280 DATA 160,32,94,133,198,246,165,246,240,3
282 DATA 76,253,130,169,2,133,148,162,13,160
284 DATA 0,169,14,32,111,132,162,20,32,0
286 DATA 143,162,24,32,0,143,32,94,133,32
288 DATA 94,133,32,94,133,76,2,130,162,0
290 DATA 189,174,191,157,36,137,232,224,3,208
292 DATA 245,169,4,133,148,162,12,160,12,169
294 DATA 28,32,111,132,162,12,32,0,143,32
296 DATA 103,133,165,247,5,248,5,249,240,21
298 DATA 32,216,136,32,133,136,32,133,136,32
300 DATA 133,136,32,133,136,32,133,136,76,211
302 DATA 131,32,94,133,166,147,232,224,6,240
304 DATA 5,134,147,76,223,130,164,246,32,138
306 DATA 136,136,208,250,32,103,133,32,103,133
308 DATA 230,141,165,141,41,15,170,189,107,137
310 DATA 133,148,162,7,160,26,169,52,32,111
312 DATA 132,165,141,41,15,201,15,208,25,162
314 DATA 36,32,0,143,173,130,143,56,233,8
316 DATA 141,130,143,238,131,143,173,132,143,73
318 DATA 48,141,132,143,173,0,220,41,16,208
320 DATA 189,76,2,130,162,0,169,32,157,0
322 DATA 188,157,0,189,157,0,190,157,152,190
324 DATA 232,208,241,96,162,0,138,149,160,232
326 DATA 224,16,208,249,96,133,149,169,160,157
328 DATA 144,189,157,224,189,185,16,137,9,128
330 DATA 157,184,189,165,148,157,144,217,157,184
332 DATA 217,157,224,217,232,200,196,149,208,223
334 DATA 32,100,132,96,173,0,220,41,16,240
336 DATA 249,96,162,131,169,0,149,0,232,208
338 DATA 251,96,72,138,72,152,72,173,25,208
340 DATA 41,1,141,25,208,208,3,76,88,133
342 DATA 165,130,201,2,240,66,169,2,133,130
344 DATA 169,249,141,18,208,169,255,141,21,208
346 DATA 169,127,141,28,208,162,0,160,0,185
348 DATA 160,0,10,110,16,208,153,0,208,185
350 DATA 161,0,153,1,208,181,176,24,117,184
352 DATA 157,248,191,189,173,137,157,39,208,232
354 DATA 200,200,224,8,208,219,32,63,143,76
356 DATA 88,133,169,20,141,17,208,169,252,205
358 DATA 18,208,208,249,169,27,141,17,208,169
360 DATA 0,141,21,208,169,1,133,130,169,0
362 DATA 141,18,208,169,1,133,131,162,0,181
364 DATA 241,9,48,157,192,191,189,247,136,9
366 DATA 48,157,227,191,232,224,5,208,236,162
368 DATA 0,181,247,9,48,157,174,191,232,224
370 DATA 3,208,244,165,246,9,48,141,208,191
372 DATA 165,147,24,105,49,141,221,191,104,168
374 DATA 104,170,104,64,162,50,32,103,133,202
376 DATA 208,250,96,169,0,133,131,197,131,240
378 DATA 252,96,165,137,24,105,1,41,31,133
380 DATA 137,74,170,189,91,137,141,180,137,173
382 DATA 64,162,10,144,2,9,1,10,144,2
384 DATA 9,1,141,64,162,141,72,162,141,87
386 DATA 162,141,95,162,173,80,162,74,144,2
388 DATA 9,128,74,144,2,9,128,141,80,162
390 DATA 141,88,162,141,71,162,141,79,162,230
392 DATA 132,165,132,74,74,41,7,170,224,4
394 DATA 144,2,162,3,189,204,133,141,253,169
396 DATA 141,253,171,96,150,215,85,20,169,0
398 DATA 133,139,173,0,220,74,176,30,166,144
400 DATA 208,26,162,252,134,142,162,255,134,143
402 DATA 162,1,133,144,133,252,162,0,32,0
404 DATA 143,162,4,32,0,143,165,252,74,74
406 DATA 176,9,32,77,134,162,0,134,184,230
408 DATA 139,74,176,9,32,87,134,162,8,134
410 DATA 184,230,139,165,161,24,101,142,133,161
412 DATA 166,143,232,224,4,208,13,166,142,232
414 DATA 224,5,208,2,162,4,134,142,162,0
416 DATA 134,143,160,160,165,139,240,14,200,165
418 DATA 138,105,1,41,7,133,138,201,4,144
420 DATA 1,200,132,176,165,144,240,4,169,161
422 DATA 133,176,96,166,160,202,224,12,144,3
424 DATA 134,160,96,166,160,232,224,163,176,3
426 DATA 134,160,96,169,0,133,228,165,161,201
428 DATA 213,144,5,169,1,133,228,96,165,160
430 DATA 56,233,6,133,224,24,105,13,133,225
432 DATA 165,161,56,233,15,133,226,24,105,32
434 DATA 133,227,162,0,160,0,181,162,197,224
436 DATA 144,24,197,225,176,20,181,163,197,226
438 DATA 144,14,197,227,176,10,169,1,224,12
440 DATA 208,2,169,2,133,228,200,232,232,224
442 DATA 14,208,219,165,161,201,34,176,1,96
444 DATA 56,233,28,74,74,74,170,189,123,137
446 DATA 141,242,134,189,148,137,141,243,134,165
448 DATA 160,56,233,9,74,74,170,32,241,134
450 DATA 133,224,232,32,241,134,133,225,165,224
452 DATA 201,32,208,17,165,225,201,32,208,11
454 DATA 169,1,133,144,76,13,135,189,100,100
456 DATA 96,165,142,201,128,144,1,96,169,0
```

NEW GAMES NEEDED

If you have a homebrew project you would like to see featured then please contact us at:
retrogamer@imagine-publishing.co.uk

WHAT'S BREWING?

All the latest news from the homebrew community



» [MSX] The spooky but cute *Zombie Incident*.

>> MSX games galore

The 2011 MSXdev games competition has recently ended, seeing nine completed games released. As with previous years it's a mixed bag, but there's what looks like a solid conversion of *Alter Ego* from the Spectrum, the chance to control a huge combat robot in *Mecha 8*, and even an implementation of chess called *ExChess*. Wander over to **kikstart.eu/msxdev-2011-status** for downloads.



» [Spectrum] Trippy stuff.

>> Ooh, pretty!

The latest release from Dave Hughes at Stonechat Productions is *Endless Forms Most Beautiful* (*EFMB* for short) but, despite the rather psychedelic title, it's actually a platformer that bears a few similarities to his first Spectrum game, *Stamp Quest* – although we've been assured that it adds some new ideas to the pot. Beautiful downloads are concealed behind **kikstart.eu/efmb**



» [Amstrad CPC] Look! *R-Type* but in colour!

>> Just our type

And just in time for issue 100's news is the release of the gorgeous *R-Type* remake that Amstrad CPC fans have been waiting patiently for. The developers felt that their favourite machine had received a raw deal with Electric Dreams' conversion and set out to produce something better. Blast off and strike the Bydo empire at **kistart.eu/rtype-cpc**

HOMEBREW

THE LATEST REVIEWS

All the latest news from the homebrew community



» [Amstrad CPC] Sorry for invading your space.

BB4CPC

» **FORMAT:** AMSTRAD CPC » **DEVELOPER:** CNGSOFT
» **DOWNLOAD:** KIKSTART.EU/BB4CPC » **PRICE:** FREE

Bub and Bob's mission to rescue their kidnapped girlfriends and break the enchantment that has turned them into dinosaurs has previously made an appearance on the Amstrad, but there were gamers who felt that the CPC was capable of a better implementation. One of these people was programmer César Nicolás González, who, rather than just talk about what could be improved, decided to sit down and produce his own version from scratch.

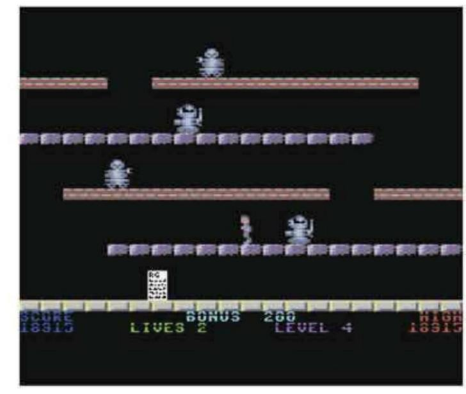
And the result of his effort is called *Bubble Bobble For CPC* – or *BB4CPC* for brevity – and, when placed next to Firebird's official conversion, the improvements are notable; the graphics have been redone to improve the shape and add more colour, while sound has been beefed up with conversions of tunes from the coin-op soundtrack. But the most important factor is, of course, the gameplay, and *BB4CPC* has benefited greatly from César's attention there as well; the basic mechanics are all present and pretty much correct, so Bub and Bob both run and jump around the play area, spitting bubbles, in order to capture enemies before popping them and collecting the treat left behind. Taking too long sees the enemies get more aggressive and Skel-Monsta summoned.

Although the original CPC conversion was reasonable, *BB4CPC* is a significant upgrade and is a great remake overall. The only serious negative has to be the way the sprites flicker during play, but it's worth ignoring that to play what is otherwise a well-presented, solid conversion.

87%




```
458 DATA 133,143,133,142,133,144,165,161,41,248
460 DATA 24,105,5,133,161,165,224,41,254,201
462 DATA 72,208,6,32,77,134,76,58,135,201
464 DATA 74,208,6,32,87,134,76,58,135,165
466 DATA 225,41,254,201,72,208,6,32,77,134
468 DATA 76,58,135,201,74,208,3,32,87,134
470 DATA 96,162,0,160,0,185,216,0,240,3
472 DATA 76,129,135,181,162,217,192,0,240,11
474 DATA 144,6,32,205,135,76,89,135,32,213
476 DATA 135,181,163,217,204,0,240,11,144,6
478 DATA 32,195,135,76,107,135,32,200,135,181
480 DATA 162,217,192,0,208,12,181,163,217,204
482 DATA 0,208,5,169,1,153,216,0,76,184
484 DATA 135,181,162,217,198,0,240,11,144,6
486 DATA 32,205,135,76,147,135,32,213,135,181
488 DATA 163,217,210,0,240,11,144,6,32,195
490 DATA 135,76,165,135,32,200,135,181,162,217
492 DATA 198,0,208,12,181,163,217,210,0,208
494 DATA 5,169,0,153,216,0,232,232,200,192
496 DATA 6,240,3,76,63,135,96,214,163,214
498 DATA 163,96,246,163,246,163,96,214,162,169
500 DATA 0,153,185,0,96,246,162,169,8,153
502 DATA 185,0,96,32,121,136,201,255,240,61
504 DATA 170,32,121,136,168,185,123,137,141,15
506 DATA 136,141,24,136,185,148,137,141,16,136
508 DATA 24,105,28,141,25,136,32,121,136,133
510 DATA 135,32,121,136,133,136,32,121,136,168
512 DATA 165,135,157,100,100,73,1,133,135,165
514 DATA 136,157,100,100,232,136,16,238,76,221
516 DATA 135,32,121,136,133,145,32,121,136,133
518 DATA 146,162,0,160,0,32,121,136,201,0
520 DATA 208,17,153,162,0,153,163,0,149,192
522 DATA 149,198,149,204,149,210,76,103,136,149
524 DATA 177,32,121,136,153,162,0,149,192,32
526 DATA 121,136,153,163,0,149,204,32,121,136
528 DATA 149,198,32,121,136,149,210,169,1,149
530 DATA 216,200,200,232,224,6,208,193,32,121
532 DATA 136,133,174,32,121,136,133,175,96,173
534 DATA 16,101,238,122,136,208,3,238,123,136
536 DATA 96,162,5,76,145,136,162,2,76,145
538 DATA 136,162,3,181,240,24,105,1,201,10
540 DATA 240,5,149,240,76,168,136,169,0,149
542 DATA 240,202,224,255,208,233,162,0,181,240
544 DATA 221,246,136,240,4,144,7,176,6,232
546 DATA 224,6,208,240,96,162,0,181,240,157
548 DATA 246,136,232,224,6,208,246,96,165,247
550 DATA 5,248,5,249,208,1,96,166,250,232
552 DATA 224,16,208,27,162,2,181,247,56,233
554 DATA 1,201,255,240,5,149,247,76,241,136
556 DATA 169,9,149,247,202,224,255,208,233,162
558 DATA 0,134,250,96,0,0,0,5,0,0
560 DATA 19,3,15,18,5,32,8,9,7,8
562 DATA 12,9,22,5,19,12,5,22,5,12
564 DATA 32,32,7,1,13,5,32,32,15,22
566 DATA 5,18,32,32,2,15,14,21,19,32
568 DATA 20,13,18,32,24,53,32,32,9,19
570 DATA 19,21,5,32,49,48,48,32,9,19
572 DATA 32,6,9,14,9,19,8,5,4,33
574 DATA 32,32,18,7,32,18,1,13,16,1
576 DATA 7,5,32,32,32,2,25,32,3,15
578 DATA 19,9,14,5,32,9,2,8,10,15
580 DATA 7,1,1,1,13,3,5,14,4,11
582 DATA 6,0,6,2,4,5,3,7,1,1
584 DATA 7,3,5,4,2,6,0,0,40,80
586 DATA 120,160,200,240,24,64,104,144,184,224
588 DATA 8,48,88,128,168,208,248,32,72,112
590 DATA 152,192,188,188,188,188,188,188,188,189
592 DATA 189,189,189,189,189,190,190,190,190,190
594 DATA 190,190,191,191,191,191,191,10,15,15
596 DATA 15,15,15,15,1,4,2,78,10,13
598 DATA 22,2,78,10,13,4,7,64,15,3
600 DATA 32,7,64,15,3,4,12,70,14,13
602 DATA 22,12,70,14,13,14,17,64,15,3
604 DATA 22,17,64,15,3,4,22,66,13,31
606 DATA 255,132,205,167,14,29,14,209,167,86
608 DATA 205,86,29,167,158,29,158,209,0,0
610 DATA 0,30,205,70,205,70,165,70,125,30
612 DATA 125,30,85,30,45,70,45,102,45,142
614 DATA 45,142,85,142,125,102,125,102,165,102
616 DATA 205,134,205,86,173,86,133,86,93,86
618 DATA 37,255,0,22,76,9,11,12,22,74
620 DATA 10,15,28,22,76,9,11,4,2,72
622 DATA 10,21,0,6,74,10,13,4,10,72
624 DATA 10,13,0,14,74,10,13,29,2,76
626 DATA 15,3,36,6,76,15,3,29,10,76
628 DATA 15,3,36,14,76,15,3,29,18,76
630 DATA 15,3,255,12,205,167,144,21,144,205
632 DATA 167,116,173,116,21,164,48,205,120,205
634 DATA 166,12,177,28,177,0,0,36,205,130
636 DATA 173,130,109,130,45,52,45,28,45,52
638 DATA 109,28,109,16,205,158,141,158,77,28
640 DATA 77,52,77,28,141,52,141,86,45,255
642 DATA 0,6,67,13,4,35,6,66,13,4
644 DATA 8,10,70,14,9,22,10,70,14,9
646 DATA 0,14,67,12,4,35,14,66,12,4
648 DATA 6,18,70,14,11,22,18,70,14,11
650 DATA 0,22,67,13,39,255,152,77,167,86
652 DATA 21,86,205,163,40,109,72,109,163,100
654 DATA 109,132,109,165,32,173,72,173,165,100
656 DATA 173,140,173,0,86,205,156,77,16,141
658 DATA 86,61,156,141,16,77,102,109,70,109
660 DATA 156,141,156,77,16,77,16,141,86,141
662 DATA 255,0,2,78,10,7,12,2,78,10
664 DATA 23,0,7,68,12,31,4,12,78,10
666 DATA 23,32,12,78,10,7,8,17,68,12
668 DATA 31,0,22,76,15,39,255,12,205,164
670 DATA 68,45,136,45,165,12,85,120,85,164
672 DATA 37,125,104,125,165,52,165,160,165,0
674 DATA 0,44,165,60,165,128,85,112,85,92
676 DATA 125,76,125,60,125,56,205,72,205,88
678 DATA 205,104,205,80,45,64,45,152,125,44
680 DATA 205,60,205,96,85,80,85,64,85,48
682 DATA 85,32,85,255,0,16,64,9,5,11
684 DATA 16,64,9,5,23,16,64,9,5,34
686 DATA 16,64,9,5,255,12,157,166,40,21
688 DATA 40,205,166,86,205,86,25,166,132,21
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» [C64] Make sure you pick up every last page.

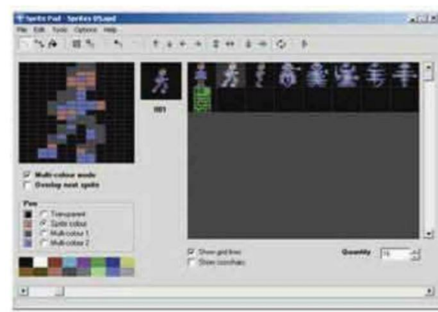


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692 DATA 125,148,157,62,157,110,157,24,157,40
694 DATA 125,86,125,132,125,148,157,110,157,62
696 DATA 157,24,157,255,18,3,68,12,3,18
698 DATA 11,68,13,3,18,19,68,12,3,0
700 DATA 15,74,10,11,28,15,72,10,11,0
702 DATA 6,74,10,11,28,6,72,10,11,12
704 DATA 15,64,15,1,26,15,64,15,1,12
706 DATA 6,64,15,1,26,6,64,15,1,255
708 DATA 86,117,164,12,77,52,77,165,121,77
710 DATA 160,77,163,12,141,51,141,164,120,141
712 DATA 160,141,166,70,21,70,213,166,102,213
714 DATA 102,21,116,77,116,149,86,181,56,149
716 DATA 56,77,86,53,86,117,44,149,128,77
718 DATA 44,77,128,149,86,117,44,149,44,77
720 DATA 128,77,86,181,86,53,255,250,192,0
722 DATA 3,15,63,170,84,175,63,255,252,240
724 DATA 192,0,1,254,128,135,197,199,205,222
726 DATA 68,235,69,125,217,121,217,233,85,235
728 DATA 167,173,191,173,183,189,212,188,117,221
730 DATA 116,213,116,84,64,170,189,176,147,176
732 DATA 147,154,85,169,85,9,59,201,251,171
734 DATA 223,250,170,255,3,3,170,255,175,250
736 DATA 170,255,64,64,170,255,175,250,170,255
738 DATA 3,3,170,255,175,250,170,255,64,64
740 DATA 170,255,175,170,255,234,234,234,234,229
742 DATA 149,170,254,169,169,169,169,85,85,169
744 DATA 253,253,85,154,223,223,85,169,253,253
746 DATA 85,154,223,223,85,171,149,189,189,189
748 DATA 189,169,213,0,20,0,0,84,0,0
750 DATA 104,0,0,184,0,0,168,0,0,100
752 DATA 0,0,48,0,1,117,0,1,253,0
754 DATA 1,253,0,1,253,0,1,253,0,2
756 DATA 254,0,2,86,0,0,84,0,0,84
758 DATA 0,0,84,0,0,84,0,0,152,0
760 DATA 1,221,0,3,223,0,0,0,5,0
762 DATA 0,21,0,0,26,0,0,46,0,0
764 DATA 42,0,0,25,0,0,92,0,0,92
766 DATA 0,1,127,128,1,255,128,1,172,0
768 DATA 0,181,0,0,21,0,0,113,64,0
770 DATA 83,64,1,195,64,1,65,64,2,5
772 DATA 0,15,9,0,15,15,0,0,15,0
774 DATA 0,0,5,0,0,21,0,0,26,0
776 DATA 0,46,0,0,42,0,0,25,0,0
778 DATA 28,0,0,28,0,0,126,0,0,126
780 DATA 0,0,104,0,0,100,0,0,20,0
782 DATA 0,28,0,0,28,0,0,20,0,0
784 DATA 80,0,0,80,0,0,96,0,0,124
786 DATA 0,0,60,0,0,0,116,0,0,236
```





» [C64] Halt or you will be eradicated!



```
788 DATA 0,1,169,0,3,107,0,2,151,28
790 DATA 3,170,184,0,116,28,1,185,0,7
792 DATA 119,64,3,155,0,7,170,64,14,238
794 DATA 192,14,118,192,7,22,64,14,54,192
796 DATA 15,54,192,14,6,192,7,255,64,0
798 DATA 68,0,0,116,0,0,16,0,0,0
800 DATA 116,0,0,236,0,1,169,0,3,103
802 DATA 0,3,87,0,1,153,0,0,116,52
804 DATA 5,239,96,23,175,96,7,173,52,31
806 DATA 171,192,21,237,64,23,171,64,1,117
808 DATA 0,31,170,208,23,235,208,1,125,0
810 DATA 31,235,208,4,68,64,7,71,64,1
812 DATA 1,0,0,0,20,0,0,117,0,0
814 DATA 236,64,33,236,80,17,48,176,19,0
816 DATA 128,51,171,176,49,239,80,35,171,192
818 DATA 32,125,0,37,235,0,59,235,116,24
820 DATA 106,232,13,235,116,21,235,84,16,125
822 DATA 0,3,171,192,5,247,80,7,253,208
824 DATA 5,85,80,1,221,64,0,0,20,0
826 DATA 0,117,0,0,236,0,1,100,64,1
828 DATA 16,64,3,0,0,15,175,208,7,175
830 DATA 80,0,116,0,0,229,0,23,174,212
832 DATA 0,237,0,0,116,0,15,175,208,7
834 DATA 175,80,1,52,192,0,48,192,1,17
836 DATA 64,0,3,64,0,93,0,0,20,0
838 DATA 0,0,20,0,0,125,0,0,235,0
840 DATA 1,235,64,1,235,64,0,20,0,0
842 DATA 52,0,7,235,80,7,175,80,0,52
844 DATA 0,55,171,92,46,175,120,0,52,0
846 DATA 0,109,0,0,109,0,0,117,0,0
848 DATA 52,0,0,16,0,0,60,0,0,52
850 DATA 0,0,20,0,0,7,255,224,4,231
852 DATA 224,5,95,224,4,215,224,5,103,224
854 DATA 7,255,224,5,255,160,4,73,32,7
856 DATA 255,224,6,254,224,4,82,160,7,255
858 DATA 224,5,215,32,4,137,96,7,255,224
860 DATA 4,111,96,7,41,32,7,255,224,5
862 DATA 235,32,4,66,32,7,255,224,0,162
864 DATA 0,138,157,0,212,232,224,29,208,248
866 DATA 168,153,88,0,200,192,7,208,248,96
868 DATA 160,0,189,94,143,153,80,0,232,200
870 DATA 192,4,208,244,164,94,200,192,3,208
872 DATA 2,160,0,132,94,185,91,143,170,169
874 DATA 0,157,4,212,165,80,157,1,212,153
876 DATA 88,0,165,83,157,5,212,165,82,157
878 DATA 4,212,165,81,153,91,0,169,15,141
880 DATA 24,212,96,162,0,160,0,185,88,0
882 DATA 24,121,91,0,153,88,0,157,1,212
884 DATA 138,24,105,7,170,200,192,3,208,233
886 DATA 96,0,7,14,16,3,17,9,40,3
888 DATA 17,9,80,32,33,10,32,140,17,187
890 DATA 32,144,17,10,32,248,33,12,16,255
892 DATA 17,12,192,124,129,11,128,196,33,11
894 DATA 128,20,17,187
```

THE LATEST REVIEWS

All the latest news from the homebrew community



» [MSX] The only way is up.

JUMPING

» **FORMAT:** MSX » **DEVELOPER:** PEPE VILA » **PRICE:** FREE
» **DOWNLOAD:** KIKSTART.EU/MSXDEV-2011-STATUS

It looks and sounds splendid, but words like 'frustrating' can't do MSXdev entry *JumpinG* justice. Unless you're into pixel-accurate platforming action and hurling obscenities at your television, it might be best to avoid this one.

66%



» [Atari 2600] Oh I do like to be inside…

SEAWEED ASSAULT

» **FORMAT:** ATARI 2600 » **DEVELOPER:** DUANE ALAN HAHN
» **DOWNLOAD:** KIKSTART.EU/SEAWEED-2600 » **PRICE:** FREE

Take control of the Manatee and patrol your sector, avoiding or torpedoing seaweed, dodging attacks from vines and working around passing cephalopods. This is simple but is surprisingly engrossing all the same.

73%



» [ZX81] Eat laser, space pirate zero!

SHOOT

» **FORMAT:** ZX81 » **DEVELOPER:** DONKEYSOFT
» **DOWNLOAD:** KIKSTART.EU/SHOOT-ZX81 » **PRICE:** FREE

Shoot bears a resemblance to Jeff Minter's *Laser Zone*. Space pirates are attacking stellar trade lanes and the player has to blast them while letting legitimate cargo drones through. It's quite hypnotic in the short term but has no real depth.

58%

MAILBAG

HAVE YOUR SAY… SEND US A LETTER OR MAKE YOURSELF HEARD ON THE ONLINE FORUM – **WWW.RETROGAMER.NET**

STAR LETTER

IGNORE YOUR MATES

Dear Retro Gamer

As one of your younger readers (I am just 13) I am subject to a lot of mockery from my schoolmates and known as "the old man." I'll show them and their stupid *Call Of Duty*! Anyway, I have subscribed to **Retro Gamer** for over two years, and over this time you have inspired me to dish out lots of money on retro gaming. I now have an NES, a Mega Drive with Mega CD attachment, an Atari ST and a Spectrum, all with a lot of games. So keep up the good work, and keep getting me to spend more money.

Alex Capper

Hi Alex, it's always nice to know that our articles inspire people to buy and enjoy machines and games that they might otherwise be ignorant about, and it sounds like you already have a good collection. One day *COD* will be retro too, so ignore your friends and enjoy our latest eMag.

WIN!

Every month, one lucky reader will receive a copy of our latest eMag, **Retro Gamer Load 3**, a bargain if ever there was one. All you have to do is present a lucid, thought-provoking piece of literature that melts our souls. Failing that, something funny with swear words, or something *Strider*-related will go down just as well…

CONGRATULATIONS AND CELEBRATIONS

We've had a huge number of letters from readers about us reaching issue 100. Here are just a few, but many thanks to all of you for your kind words.

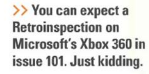
RIGHT FROM THE START

Dear Darran and the RG crew,

Well done on reaching issue 100, guys. I've been with you from the very start after seeing issue 1 in WHSmith. That day, I inspected a few copies before I picked one, because I thought they were all dog-eared. Since then, you've become the only magazine I've ever subscribed to and you've gone from strength to strength since day one. It's interesting seeing recent machines become retro and get coverage in the pages of **Retro Gamer**, but at least you'll never run out of machines and games to cover. I look forward to the Xbox 360 Retroinspection! More power to you, I say. Here's to another 100. Oh, and more Sega Saturn, please!

Paul Blackwood





>> You can expect a Retroinspection on Microsoft's Xbox 360 in issue 101. Just kidding.

HAPPY 100

Dear Retro Gamer

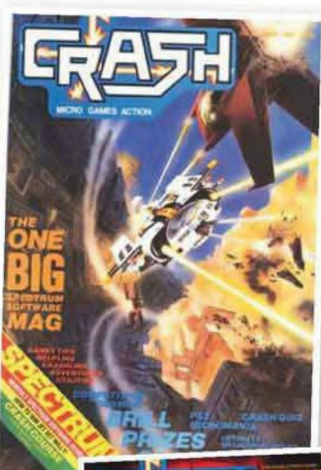
I really cannot believe that you've reached the grand old age of 100 and you don't look a day over 21! I've been with **Retro Gamer** since the very first issue way back in the 1970s (not quite, but it feels like it sometimes) and you've never failed to deliver a top notch read every month.

I always equate the joy I get with purchasing a new issue of **RG** to when I started reading *Crash Magazine* back in the 1980s whilst still at school. When a new issue was due, I'd always hurry to the newsagents before lessons started to grab a copy so I could read and discuss it with my school friends during the day. Obviously I've long since left school, but the excitement of getting **RG** every month is still there, reminding me of my love of gaming and magazines.

Even though we're now in an increasingly paperless society, nothing beats sitting in a comfy chair, with a cup of coffee, a bar of chocolate and a fresh issue with the wonderful smell that magazines emit. I've had huge feelings of nostalgia from reading the Spectrum features and learned many things about the consoles, handhelds and games that I'll try out when finances allow.

Thanks for the effort that you put into every issue and here's to the next 100!

Ryan





>> Ryan tells us that he likens getting the latest issue of Retro Gamer to buying *Crash* when he was a boy. We're not worthy.

BETTER THAN EVER

Dear Darran and the RG Team,

Instead of simply congratulating you on the magnificent tome that is **Retro Gamer**, I thought I'd share a personal experience I've had during my time as a loyal reader who has never missed an issue.

Seven years ago, after reading issue 6 of **Retro Gamer** I waited eagerly for the next issue to arrive on August 4th. It didn't. I checked the local newsagent regularly for weeks before I began to think I would never again read what had become my favourite magazine. Months passed, until, praise the digital overlord, in December 2005 **Retro Gamer** 'Load 19' arrived! I'm sure I heard a fanfare sound from somewhere, perhaps in my head, when I saw **Retro Gamer** on the shelf again. Since that issue I've been a subscriber and I never once worried that **Retro Gamer** would again do a vanishing act. 81 issues later I'm delighted to be able to thank all the team behind **Retro Gamer** for regularly producing the best and only gaming magazine I need.

Happy 100th **RG**!

Cheers Matt



CONTACT US

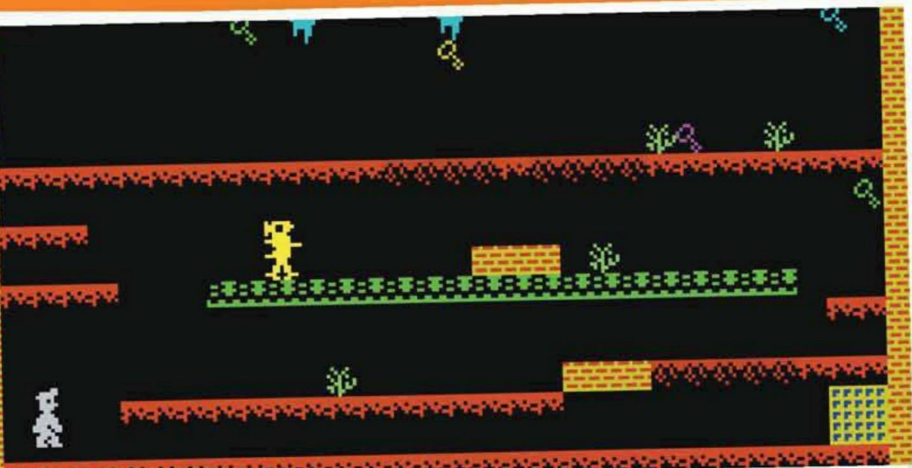
Snail Mail: Retro Gamer, Imagine Publishing, Richmond House, 33 Richmond Hill, Bournemouth, Dorset, BH2 6EZ

Email: retrogamer@imagine-publishing.co.uk



>> YOUTUBE UPDATE

THIS MONTH DARRAN'S been going all gaga over Sega's excellent *Daytona* port for Xbox 360 and PlayStation 3. He's also been getting back into the Atari Lynx, having recently picked up a few sealed games. Check the videos out at the usual place. As always, you can find his stuff at **www.youtube.com/user/RetroGamerDaz**



>> [Spectrum] Don't worry guys, we'll always be covering classics like *Manic Miner*.

> "Even though we're now in an increasingly paperless society, nothing beats a comfy chair, cup of coffee, and a fresh issue"

A TOAST TO RETRO GAMER

Morning all!

So… Issue 100! I have to admit, when I found issue 3 in my local Co-Op, I never considered the possibility that **Retro Gamer** would still be around in 2012! I didn't think there would be anywhere near enough material to fill that many magazines, but against all the odds you've done it. Excellent work.

If I'm totally honest, I don't play much retro, but I absolutely love reading the stories and facts behind those old magical classics. 100 issues of warm fuzzy nostalgia in my case. I'm raising a carton of Um Bongo to toast another 100!

DJCarlos

NICHE BUT PROUD

To Darran,

Getting to issue 100 of a niche magazine is an amazing achievement, but I think you and the team should reflect on the negative feedback you have received over the years.

There is often a lot of feedback on the forum and in the letters pages, including: "the cover is rubbish", "not enough 8-bit coverage", "too much 8-bit coverage", "the PlayStation/Dreamcast are not retro", "you are obviously taking kickbacks from Sega/Nintendo etc", "you have already covered this, why go over it again", "the letters page is pointless", "I spotted an error on page…", "how did you not mention X in the top 25 games list"… I could go on.

The point I want to make is that despite all the negative feedback, I bet virtually no one (me included) has stopped buying the magazine – as far as I'm concerned, that is your greatest achievement and you should all be very proud.

Congratulations to you all and (please) keep it going for at least another 100 issues.

Stewart Campion

Thanks for all the kind words guys, we really do appreciate it.

RETROBATE PROFILE



Name:	Darren Slater
Joined:	9th November 2011
Location:	Leeds
Occupation:	Business Support Analyst
Website:	http://www.agressive-fly-enterprises.co.uk/
Fave Games System:	Atari 8-bit



>> [Xbox 360] *Gears Of War 3*. Definitely not retro yet.

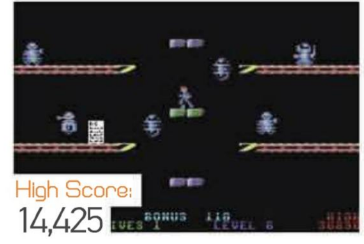
* BEAT THE TEAM

Think you're good at retro games? See if you can beat the staff at some of their favourite titles



RG RAMPAGE

To celebrate our new type-in game, we've been trying to rack up high scores on it. Jason Kelk assures us that there are six levels, but we've only seen four of them so far!



High Score: 14,425



DARRAN'S RG RAMPAGE TIP

It's worth remembering that *RG Rampage* is all about memory. The pages of the magazine appear in the same place every time, so you need to memorise their position so you can collect them quickly and earn as many bonus points as possible.



High Score: 34,720



STUART'S RG RAMPAGE TIP

Study the movement of the enemy droids to determine where the safe spots on each stage are, and remember you have a great level of control over Darran, even when he's falling from ledges, so use this to your advantage.

From the forum

» To have your say visit **www.retrogamer.net/forum**

Every month, Retro Gamer asks a question on the forum and prints the best replies. This month you wanted to tell us

Congratulations on reaching issue 100!

Bub&Bob
Just to say a huge well done and thank you for keeping such a niche magazine going. Here's to the next 100!

Scapegoat
Thank you for giving me my monthly dose of nostalgia and also teaching me something new for the past few years. Here's to the next ton.

Wookie
I'm new to the scene (ish) but commendable work people

DreamcastRIP
One hundred issues in and still no closer to resolving the thorny issue of "What is retro?"

Cafeman
Congrats on 100 issues **RG**! Despite my whining for less "Speccy", I enjoy every issue I purchase and often go back and re-read stuff. Here's hoping for 100 more, when Xbox Live is in a "remember the 00s" article!

RetroMartin
Excellent magazine that I always pick up regardless of how many articles are relevant to me, well researched and a great laugh! Well done guys!

Sputryk
CONGRATULATIONS on reaching your Centenary! Someone ought to inform the Queen! I first noticed **RG** after the covermount was ditched, and I haven't missed an issue since. Not everything covered has appealed, but it has nevertheless been fascinating to read whatever the topic. My only disappointment is that my Reader Review of Batman will never make an appearance as Darran's beat me to it.

markopoloman
Congratulations to the whole **RG** team on getting to that BIG 100! Special note must be made to Martyn Carroll for starting it all off, and Darran Jones for the awesome job done since **RG** was rescued. Roll on issue 200!

necronom
RG is my second favourite mag ever (*Zzap!64* being No.1). Well done everyone involved. If we could get rid of those pesky consoles, add a few more computers (excluding PCs) and have some more hardware features it would be perfect.

the_hawk
I still remember being gob-smacked seeing issue 1 in WHSmith thinking, what a brilliant idea for a magazine, though it'll probably not get beyond a few issues. Thanks for producing the only mag I read cover to cover since *Your Sinclair* joined the choir immortal back in '93. Here's to the next 100.

Seadog74
Congrats on reaching 100 marvelous issues. Always good to read about your fave retro machines and games, as well as those you don't really know. Let's hope there is no end in sight to this formula.

Rinoa
Happy 100th! Congrats on an excellent mag and also in creating a superb community on the forum.

Hitman_HalStep
Thanks for a great mag AND for pointing me to so many great games I never knew existed, which I am sure you will continue to do in the future.

r0jaws
It amazes me that a magazine can be devoted to such a niche hobby and still be on the shelves every month. Then I pick up my latest copy and remember why. Nice one guys.

yakmag
Congrats on the big 100! The only mag that comes close to capturing the heady days of *Zzap!* etc... As a testament to this, yours is the only mag I subscribe to! Here's to the next 100!

look at it sideways
I first picked up the magazine thinking "better get this while it lasts..." but what would you know, retro sells. It would be a discredit to the magazine to say "nostalgia" sells (what I'd initially written until I reconsidered); **Retro Gamer** is the closest thing the UK has to a chronicled history of gaming, and all the staff deserve massive credit for what they've achieved.

NorthWay
100 issues of being better than all the rest.
100 issues of listening to your readers more than anything else I've ever seen.100 issues of good journalism and not by the dozen articles that competes for attention with every other magazine on the shelf that has exactly the same content.
A hundred congratulations for surviving against what everyone must have told you.

nakamura
I feel I should put a lovely heartwarming message what with Darran being my cousin and all, but I know the guy too well and his head barely fits on the planet as it is!

neuromancer
100 issues, two publishers, 11,546 pages - 100% retro heaven. A ray of sunshine every month, **RG** is consistently well written, passionately researched, informative, entertaining, and an important record of the birth of gaming. Many Happy Returns **Retro Gamer**!

DaveOwl
I've not been reading the magazine long but you can tell pretty quickly that it is quality. You don't get to 100 issues (and beyond!) without being a great mag. I also haven't subscribed to anything else for about 14 years now so that is quite a testament. Well done!

Kai
Thanks for 100 wonderful issues. Your love for retro games and the passion with which all of you write your articles manage to hook me every time. **RG** - simply the best gaming mag in the world!

gmintyfresh
Congratulations on the big 100 **RG**. Thank you for the fascinating articles, dedication, those lost stories of gaming past, and most importantly listing to your readers. I really do feel like it's our magazine.

pforson
The ZX Spectrum is the greatest achievement in British history. **Retro Gamer** magazine comes a close second.

ChipTune
Congrats on issue 100! **Retro Gamer** is an outstanding magazine and one I always look forward to getting through the door every month.

Blumf
A milestone issue for a milestone magazine. No other magazine celebrates the past in such a relevant way. I have been a subscriber since issue 4 and have enjoyed something or learnt something from every one of the 100 issues. Awesome work! Long may it continue.

NickLoTurco10
That moment when the magazine drops through the letter box on a Saturday morning still gets me excited... Issue 100 will be even more so.

RBT
Congratulations on reaching 100 issues **RG**, here's to another 100.

themightymartin
My most heartfelt compliments to the **RG** team, the freelancers, the forum members and everybody else that makes the magazine such a joy to read. I hope it is still being published long after the 360 and the PS3 start to be considered retro.

Szczepaniak
When first hearing that such a magazine existed, it felt like a dream becoming reality: something that talked about our favourite classics and uncovered fascinating new tales of how they came about. Despite ups and downs over its history, there's not been an issue that hasn't surprised or entertained me in some way. That fact that I've been able to contribute over years has also been a privilege and an honour. Keep up the struggle - there's a near endless number of mysteries in the history of games, and I can only hope that as many as possible are solved and recorded before they're permanently lost to the inevitability of time.

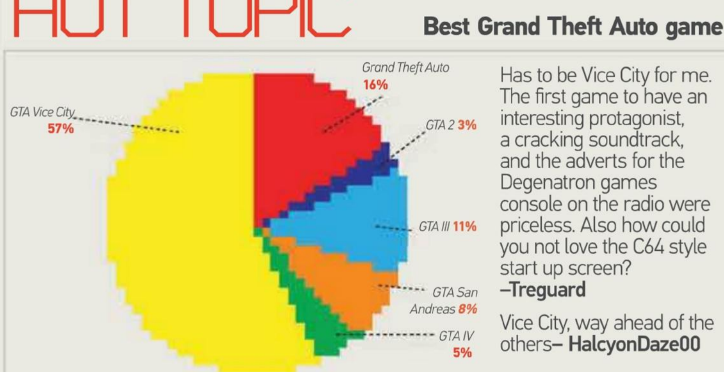
Bazzalb
Congrats **RG**. You produced more issues than *Zzap64*. Not a bad performance in anyone's language. What's even more impressive, is that the quality only gets better.

Smurph
I like old games, and **REtro Gamer** has been supplying me with all the reminders that I needed to rediscover all those I had forgotten about over the years, and for that - thank you.

Jeremiah Jones
Not only has **Retro Gamer** remained greatly entertaining with each issue, it has also provided a fascinating and thorough historical documentation of the video game medium as a whole. It's because of this that I believe the magazine will survive and thrive for a very long time.

Space Holiday
I always found myself 'behind the times' when it came to video games but eventually I decided that actually I prefer the older games to the newer ones! So when I first saw **Retro Gamer** peaking out of the shelf I bought it straight away and I've read each issue since I first starting purchasing it every month from cover to cover... Thanks **RG**, you guys are gods, happy 100!





Has to be Vice City for me. The first game to have an interesting protagonist, a cracking soundtrack, and the adverts for the Degenatron games console on the radio were priceless. Also how could you not love the C64 style start up screen? **–Treguard**

Vice City, way ahead of the others**– HalcyonDaze00**

CONTACT US **Snail Mail:** Retro Gamer, Imagine Publishing, Richmond House, 33 Richmond Hill, Bournemouth, Dorset, BH2 6EZ **Email:** retrogamer@imagine-publishing.co.uk

Name the Sprites

You might have noticed that our front cover is packed with some of the greatest videogame heroes of the past 30 years, but do you know who they all are? Simply write done the names of all 60 sprites and send it to the usual **Retro Gamer** address. We'll print all the names next month.

CURRENTLY PLAYING





DARRAN

Battlefield 3

I don't usually play games like this, as I think they're tosh. After pressure from a cousin, I decided to pick up the *Limited Edition*, and it's actually a lot of fun. I've racked up more kills with a boat now than I have with a gun.





STUART

Metal Gear Solid HD Collection

I've been revisiting the *Metal Gear* series via the recent splendid HD collection by Bluepoint. I never did finish *Snake Eater*, and *Peace Walker* completely passed me by.





DAVID

Metal Gear Solid HD Collection

Bluepoint Games have made some great remasters, and this cracking compilation is no exception. *Metal Gear Solid 2* is showing its age now, but this remains a fantastic selection of games.



Imagine Publishing Ltd
Richmond House, 33 Richmond Hill,
Bournemouth, Dorset, BH2 6EZ
☎ +44 (0) 1202 586200
Web: www.imagine-publishing.co.uk
www.retrogamer.net

Magazine team

Editor Darran Jones
retrogamer@imagine-publishing.co.uk
☎ 01202 586237
Twitter: RetroGamer_Mag
Facebook: www.facebook.com/RetroGamerUK

Editor in Chief **Rick Porter**
Designer **Kate Logsdon**
Features Editor **Stuart Hunt**
Senior Sub Editor **Mat Hoddy**
Sub Editors **Olly Dean, Rebecca Richards**
Senior Art Editor **Greg Whitaker**
Head of Design **Ross Andrews**

Contributors
Jerry Bonner, Richard Burton, Martyn Carroll, David Crookes, Paul Davies, Ashley Day, Paul Drury, Charles Goddard, Martin Goldberg, Craig Grannell, Jason Kelk, Iain Lee,

Photo Studio
Studio equipment courtesy of Lastolite (www.lastolite.co.uk)

Advertising
Digital or printed media packs are available on request
Advertising Director James Willmott
☎ 01202 586432
james.willmott@imagine-publishing.co.uk
Head of Sales Hang Deretz
☎ 01202 586442
hang.deretz@imagine-publishing.co.uk
Account Manager Matthew Knifton
☎ 01202 586434
matthew.knifton@imagine-publishing.co.uk

International
Retro Gamer is available for licensing. Contact the International department to discuss partnership opportunities.
Head of International Licensing Cathy Blackman
☎ +44 (0) 1202 586401
licensing@imagine-publishing.co.uk

Subscriptions
Head of Subscriptions Lucy Nash
subscriptions@imagine-publishing.co.uk
For all subscription enquiries
email retrogamer@servicehelpline.co.uk
☎ (UK) 0844 848 8412
☎ (Overseas) +44 1795 592 872
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Circulation
Head of Circulation Darren Pearce
☎ 01202 586200

Production
Production Director Jane Hawkins
☎ 01202 586200

Founders
Group Managing Director Damian Butt
Group Finance & Commercial Director Steven Boyd
Group Creative Director Mark Kendrick

Printing & Distribution
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☎ +61 2 9972 8800

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» LOAD 101

nextmonth

ON SALE 29 MARCH 2012

Snaaaaaaaaaaaake!

As Metal Gear celebrates its 25th anniversary, we reveal how it has constantly reinvented the genre it created

ALSO IN THE NEXT ISSUE



BBC Micro

■ The developers explain why there was more to Acorn's home micro than just helping you with your schoolwork



Spacewar!

■ In recognition of its 50th birthday, we explore *Spacewar!*'s importance and its influence on the industry



The Hobbit

■ Discover how Melbourne House turned Tolkien's masterpiece into an epic text adventure for 8-bit computers



Ocean Software

■ Key staff at Ocean, including co-founder Jon Woods, recall the highs and lows of being a popular 8-bit publisher



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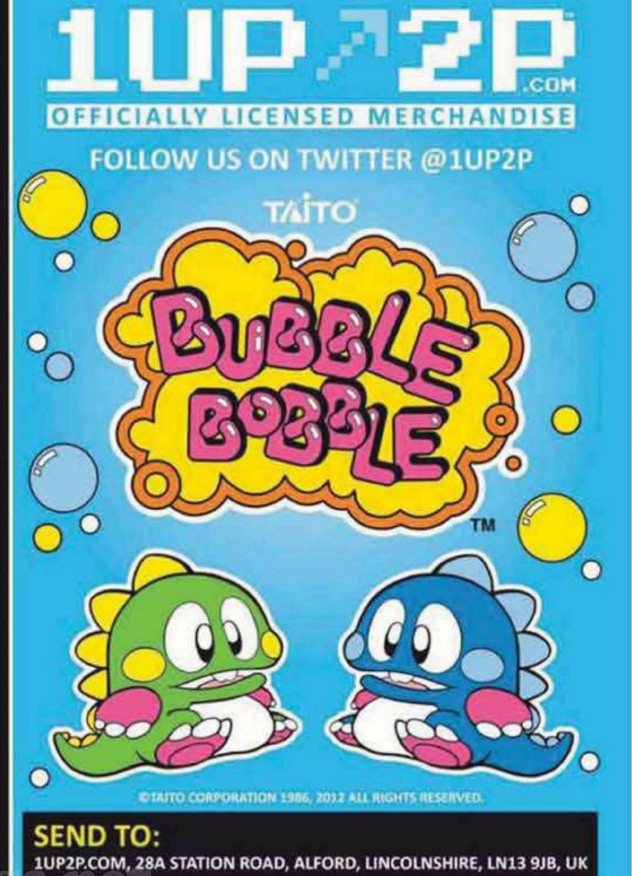




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ENDGAME

BUBBLE BOBBLE



» With 100 stages, we could think of no better game to close this very special issue of **Retro Gamer** than *Bubble Bobble*. It's a game we've covered in great depth, and one which amazingly has managed to evade this page until now. If **Retro Gamer** were a videogame, it'd definitely be *Bubble Bobble*. We just hope our 100th level has been as memorable for you as this one here.



01

» Bub and Bob reach stage 100 where Super Drunk waits, smelling of booze, slurring his words and lobbing bottles around like an irritated wino. These boys are going to need far bigger bubbles to entrap this cute alcoholic.



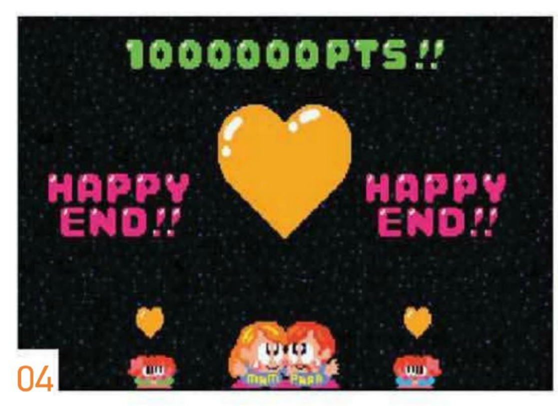
02

» Bubbles alone will not be enough to topple this drunkard. However, Bub and Bob suddenly remember those cryptic words they discovered inside one of the secret treasure rooms, some guff about magical medicine and worst fears.



03

» After whittling down his power, the two encase him, rescue their girls and are revert to their normal selves. Drunk then reveals his true form: Bub and Bob's giant parents. Christmas in the 'lun household is sure going to tense this year.



04

» But what's this? The game declares this a happy ending! How can this be? The brothers have just discovered that it was their parents who kidnapped their girls and then tried to kill them with bottles. This should be dubbed the 'shock revelation' ending.



05

» Turns out they were brainwashed by a dark force they cannot name – how convenient. Seriously, don't believe 'em boys. They'll probably be back on the silly sauce the second you turn your backs, and turn into horrible girlfriend-hating drunks once more.


CONGRATULATIONS ON THIS MILESTONE! RETRO GAMER IS MY FAVORITE CLASSIC GAMING PUBLICATION. KEEP IT UP FOR AT LEAST ANOTHER 100!
David Crane
100? Cool! You're older than ME!
Simon
retroGAMER
100!
Congratulations Darran & the team
The Pickford Bros John & Ste

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10 PRINT "HAPPY 100 Birthday"
20>GO TO 10                  -
RUN L
HAPPY 100 Birthday
HAPPY 100 Birthday
HAPPY 100 Birthday
HAPPY 100 Birthday
HAPPY 100 Birthday
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